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EDITED BY
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The following works have been received:—

Hauptmomente in der Geschichtlichen Entwicklung der Medicinischen Therapie von Dr. JUL. PETERSEN. Kopenhagen: And. Fred. Høst & Sohn, 1877.

Klinik der Pädiatrik. Von Dr. LUDWIG FLEISCHMANN, Dozent an der Universität. II. Der Erste Zalindurechbruch des Kindes nebst einer Geschichtlichen Einleitung. Wien: Wilhelm Braumüller, 1877.

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A Case of Double Optic Neuritis without Cerebral Tumour. Case of Large Cerebral Tumour without Optic Neuritis, and with Left Hemiplegia and Impereception. By J. HUGHINGS JACKSON, M.D.

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The Use of the Spectroscope in its Application to Scientific and Practical Medicine. By ERIC ROSENBERG, M.D. New York: G. P. Putnam's Sons, 1876.

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- Argument in favour of a Contagious Diseases Act; its present state. By E. T. EASLEY, M.D., Little Rock, Ark. Louisville, 1876.
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- The Collateral Circulation in Aneurism: Report of the Successful Ligation of the Innominate, the Common Carotid, the Vertebral, and the Internal Mammary Arteries; in a case of Right Subclavian Aneurism. By A. W. SMYTH, M.D. New Orleans, 1876.
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- Transactions of the Medical Society of the State of Pennsylvania, 1876.
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- Report of the Board of Health, Philadelphia, 1875. Philadelphia, 1876.
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- Report of the Northern Hospital for the Insane of the State of Wisconsin, 1876. Madison, 1876.
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The following Journals have been received in exchange:—

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 Archiv der Heilkunde, Bd. XVII., Heft 6.
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 Centralblatt für die Medicinische Wissenschaften. Nos. 37 to 48. 1876.
 Allgemeine Wiener Medizinische Zeitung. Nos. 38 to 49. 1876.
 Deutsche Medicinische Wochenschrift. Nos. 36 to 47. 1876.
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 Giornale Italiano delle Malattie Veneree e della Pelle. Ottobre, 1876.
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 Lo Sperimentale. Settembre, Ottobre, Novembre, 1876.
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 Revue des Sciences Médicales en France et de l'Etranger. Octobre, 1876.
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 L'Union Médicale du Canada. October, November, December, 1876.

The usual American exchanges have been received; their individual acknowledgment we are compelled to omit for want of space.

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 2. Transactions of the Medical and Chirurgical Faculty of Maryland, April, 1876. 8vo. pp. 165.
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- Exstrophy of the Bladder, considered specially with regard to Surgical Treatment. Thesis for the Degree of Doctor of Medicine, presented and defended by Rodolpho Valdevieso, Doctor of Medicine of Pennsylvania and Paris, etc. 8vo. pp. 76. With four lithographic plates. Paris, 1876. 200
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- Vol. VI. Diseases of the Circulatory System; together with the Chapters on Whooping-cough, Diseases of the Lips and Cavity of the Mouth, and Diseases of the Soft Palate. By Prof. Rosenstein, of Leyden; Prof. Schroetter, of Vienna; Prof. Lebert, of Vevay; Prof. Quincke, of Berne; Dr. Bauer, of Munich; Dr. Steffen, of Stettin; Prof. Vogel, of Dorpat; and Prof. Wagner, of Leipsic. Translated by George W. Balfour, M.D., of Edinburgh; Edward D. Geoghegan, M.D., of Lond.; Thomas Dwight, M.D., of Boston; J. Haven Emerson, M.D., and George C. Wheelock, M.D., of New York; and J. Solis Cohen, M.D., of Philadelphia. Albert H. Buck, M.D., New York, Editor of American Edition. New York: William Wood & Company, 1876. 212

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ART. I.—*Rupture of the Healthy Œsophagus.* By REGINALD H. FITZ,
M.D., Assistant Professor of Pathological Anatomy in Harvard University.

THE recent occurrence of a case of rupture of the œsophagus, in the practice of Dr. George O. Allen, of Boston, has led to as thorough a research as possible into the literature of the subject. The results of this investigation have seemed such as to render it desirable to call renewed attention to this lesion, of which our knowledge has been enlarged by the detailed report of this case, upon the consideration of which the present article is based.

It is to be stated at the outset, that by the term rupture of the œsophagus is meant a complete, defined solution of continuity, extending through the walls of this tube, and occurring during life.

This, of course, may be produced in various ways. The cases are sufficiently numerous where, in the progress of an abscess in the vicinity of the gullet, perforation of the latter eventually takes place. In this series may also be included the advance of cavities from the air passages and from the bronchial glands. Somewhat analogous are the instances of an aneurism of the aorta, or of its primary branches, which in time reaches the œsophagus, and the intervening tissues give way. The perforations caused by sharp and pointed foreign bodies, by the rude introduction of tubes, bougies, and the like, are also left out of consideration; so, too, the sloughings produced by caustics, which may be accidentally or intentionally swallowed, and those resulting from the progress of morbid growths. Only that form of rupture is to be considered which takes place in persons previously healthy, especially in those in whom there is no evidence of any local disease of the œsophagus or of

the surrounding parts. This possibility remains, and, as the evidence to be presented shows, there exists the certainty that a previously healthy oesophagus may be suddenly ruptured by muscular action.

Such a proposition is by no means a novel one, and has been made much more often than it has been proven. Limited as the literature of this subject is, it evidently contains numerous errors of observation and conclusion which almost warrant the scant attention, and more frequent omission, which are to be noticed in most of the text-books, whether old or recent, clinical or anatomical. The descriptions of the causes, symptoms, and their sequence, the nature of the lesion and its immediate effects, may be regarded as traditions, to be believed in, perhaps, because it is worth no one's while to contradict them; and worth no one's while, because the matter has never been thought of.

The following case may therefore be regarded as one of exceptional interest and importance: of interest, from the rarity of its occurrence, its clinical obscurity, and the long duration of life in the presence of so serious an injury; of importance, from its tolerably uncomplicated character, the thoroughness of its description, and the unquestioned nature of the lesion.

Dr. Allen writes as follows:—

"Mr. —, 31 years of age, was engaged in mercantile pursuits. His general condition was that of debility, due to the long continued and excessive use and abuse of alcoholic stimulants. A year previous to his last illness he had an attack of delirium tremens while in Washington, and, upon his partial recovery and return home, was under my charge for a while, affected with obstinate gastritis, but from which he eventually recovered. In December, 1875, he suffered from another attack of gastritis, though the threatening delirium was averted by the free use of stimulants. He recovered from this attack in about a week. During this sickness, and the previous one, a persistent and distressing symptom was the vomiting of blood, which in variable proportions formed a part of every discharge from the stomach. For years he was in the habit of eating his food into small pieces, and he ate slowly, but never complained of pain or difficulty in swallowing.

"I was called to see him about 9 P. M., January 26, 1876. Before seeing him, was told that, while at supper, about three hours previous, he suddenly became partially strangled by some article of food lodging 'somewhere in his throat.' His countenance did not become blue, nor was there any difficulty of respiration.

"Every resource of domestic surgery was employed to afford him relief, and after an hour of great discomfort and intense anxiety, he succeeded, by a concentration of his entire muscular energy, in ejecting the obstructing fragment. This proved to be a piece of hard, tough, gristly meat, nearly circular in shape, about an inch in length, and rather more than half an inch in diameter. It came from his mouth with the noise and force as if 'propelled from a pop-gun;' he sank back upon the sofa exhausted, and almost immediately ejected a moderate quantity of clotted and liquid blood. His attendant then noticed a 'swelling' at the angle of the lower jaw, on the left side, followed by a corresponding swelling on the right; these were soon united by a swollen isthmus across the upper part of the trachea

and the larynx. He was now undressed and put to bed, in a completely exhausted condition, complaining of thirst but not of pain. Fluids were easily swallowed, and without discomfort. Cold water applications were made about his throat, but, the prostration continuing, and the swelling rapidly increasing, I was called to see him.

"I found him lying on his back, with a pale face and anxious countenance; the eyes were closed, the lids twitching and trembling. The respiration was nearly natural, though slightly hurried; pulse 90, and small; skin moist. He complained of no pain, but had slight tenderness on pressure on the left side of the trachea, just over the clavicle. He was somewhat restless, and there was slight nausea. He had vomited but once, this an hour after the food was expelled, and the vomit contained no blood. There was drowsiness, but inability to sleep. The swelling was then extending upon both sides of the face, both cheeks being considerably puffed out. I learned that in his efforts at expelling the meat, the lungs were fully inflated, and then, the muscles being tense, violent expulsive efforts were made, during which he became 'red in the face.' These efforts were not suggestive of vomiting, nor was there any complaint of nausea. There was an occasional slightly bloody expectoration. A few minutes before the meat was ejected, the patient removed his collar and loosened his shirt, on account of a feeling of constriction. The swelling of the face came on very rapidly after the food was raised. Pain in the left chest was then complained of, but there was no evidence of any sudden tearing of the tissues in this region.

"A quarter of a grain of sulphate of morphia was given him, and a sinapism applied over his stomach.

"*Jan. 27.* Was called during the night. The swelling had increased; both cheeks were puffed out; the whole neck and upper part of the chest were also swollen, pitting on pressure, the pits slowly disappearing upon the removal of the fingers.

"During the day the swelling continued to increase, extending down the arms to the hands and fingers. The swollen face was hard and tense, with a dark, erysipelatous look and feel. He complained of occasional sharp, migratory pains in the right side, and in the upper part of the back. Pulse 100, and full; surface of the body dry and hot; tongue moist, and coated with a thin, white fur. There is constant thirst. The contents of the stomach are frequently ejected, and blood is occasionally vomited. He swallows without difficulty and without pain. There is tenderness on pressure in the neck, and upon both sides of the trachea. There is no cough, but a constant expectoration of thick, tenacious mucus, sometimes mixed with blood. Bowels have not been moved; urinates naturally.

"Bismuth and morphia were ordered, with ice; small quantities of beef-tea and milk, and cooling lotions externally.

"*28th.* The patient was seen several times during the day and night. His condition this morning is not materially changed, except that he suffers less pain, and has less irritability of the stomach. He slept at intervals, for a few minutes at a time, during the night. Pulse 100, and small; skin dry; thirst continuous; bowels have been moved; urinates without difficulty; is quite weak. The emphysematous nature of the affection is fully developed; the whole subcutaneous cellular tissue of the body appears to be undergoing the process of inflation. The face, eyelids, neck, the upper part of the chest in front, and the entire back, are swollen; the scrotum is enormously distended, and the inflation extends

to the middle of the thighs. Everywhere, upon slight pressure, the sharp, crackling sound, indicating the presence of air, is heard and felt. On account of the sudden onset and rapid progress of the emphysema, the relations of the parts have been so changed that the precise nature and locality of the lesion which permits the admission of air into the subcutaneous cellular tissue have not been determined. Notwithstanding the great extent of this inflation, the action of the lungs is but little impeded, and respiration is performed with but little difficulty, though with a slightly accelerated rapidity. Orthopnoea was never present.

"29th. Condition about the same as yesterday. The swelling does not increase, and has even diminished on the face and arms; the scrotum also is less distended than yesterday. The nausea has nearly disappeared, though alcoholic stimulants induce it. He is still quite weak, and is nervous and restless. Hoffmann's anodyne is more efficient in relieving pain and in quieting restlessness than any other article that has been used.

"With the assistance of Dr. Joseph Stedman, a more thorough examination of the patient was attempted, with the hope of fixing the locality of the lesion, but without satisfactory result. A general supporting treatment is pursued. In the evening symptoms of delirium tremens manifested themselves.

"30th, 31st, Feb. 1. The patient passed through an ordinary attack of delirium tremens, falling into a deep, stertorous sleep during the night of the 1st. During these three days the emphysema has remained without marked change, and the patient has complained of no pain except in the stomach. He swallowed without difficulty whatever was given him in the way of medicine or nourishment. His bowels have been opened daily. The respiration for the most part easy, and only slightly hurried. There is a profuse mucous expectoration, occasionally tinged with blood. Pulse to-day 112. There is considerable exhaustion, but stimulants and nourishment can be taken and retained.

"2d. Patient is weaker, was restless, and slept but little during the night, and is occasionally delirious; but his delirium is easily quieted, and his attention fixed for a short time. Pulse 120-130, small, and weak; respiration hurried; has but little constant pain; three bloody dejections during the afternoon and evening. During the day he had three attacks of cramp or spasm, each lasting about half an hour, immediately preceded and associated with a flushing of the face. A sharp, excruciating pain accompanied these, referred to the region of the heart and stomach. The attacks began with a trembling in all the limbs, and a quivering of all the flexor muscles; these gradually and slowly contracted, until it appeared as if the extreme limit of flexion had been reached. The extremities were firmly held in this position, and no force that it was desirable to apply would overcome this fixed rigidity of the muscles. Gradually, however, the rigid muscles would relax, and at the end of half an hour a considerable degree of mobility in the limb was re-established; though, after the first attack, the rigidity did not entirely disappear.

"The patient did not lose consciousness in these attacks, and while they lasted he was constantly turning his head from side to side, his countenance at the same time expressing mingled pain and terror. The rigidity was somewhat more marked upon the left than upon the right side. The breathing became short and quick, a desire for more air was constantly expressed, and the pulse was small and rapid; vomiting did not occur. As

the attacks passed off, a cold perspiration, commencing upon the forehead and gradually extending over the entire body, followed.

"The patient was seen and examined in the evening by Drs. F. I. Knight and J. Stedman, and a subcutaneous injection of a quarter of a grain of morphia was given him later.

"3d. The patient slept quietly during the night, waking three or four times for a moment, but immediately falling off to sleep; was awake in the morning, and was quite rational. He took nourishment and stimulants, but was extremely weak and prostrated. He died quietly and easily at 9 A. M., being seven and a half days after the beginning of his disease."

The *autopsy* was made, forty-eight hours after death, by Dr. Fitz. There was marked rigor mortis; the subcutaneous tissue of the neck and anterior portions of the trunk emphysematous; a livid patch on the right side of the neck, said to have made its appearance after death.

Head not opened. Anterior mediastinum emphysematous, independent of the conditions produced on removal of the sternum. The valves and cavities of the heart apparently normal, its muscular structure pale, with the microscope found to contain numerous granules, many of which did not disappear on the addition of acetic acid, and were apparently fat and pigment. The left pleural cavity was obliterated by old adhesions, which were emphysematous, and the costal pleura contained numerous bullæ distended with air. On the right side the posterior lateral and inferior portions of the lung were adherent to the thoracic walls by recent fibrinous adhesions, and numerous ecchymoses were present in the thickened, injected, and opaque pleura. In the apex of the right lung a cheesy nodule was found imbedded in dense fibrous tissue, and a similar mass was present in the lower part of the left upper lobe in front. The lungs were œdematous, and posteriorly injected, the lower lobes being moderately collapsed. The pulmonary arteries contained post-mortem clots.

The organs of the thorax and neck were removed in continuity.

In front and to the right, at and below the bifurcation of the trachea, was found a longitudinal rent of the œsophagus two inches in length, extending through all its coats. Its edges were sharply defined, and gave no evidence, microscopically or otherwise, of a pre-existing ulcerative or degenerative process. A communication was thus established between the œsophagus and a sinuous cavity in the posterior mediastinum on the right, which extended between the œsophagus and trachea in all directions, and behind the former to a limited extent. This cavity was of the volume of a small lemon, was crossed by fibrous trabeculæ, and filled with clotted blood. Its walls, neither soft nor pulpy, were of a greenish hue, and the thickened and reddened left pneumogastric nerve could be seen projected behind. The tissues of the posterior mediastinum on the left side were spongy and stained with blood. The pleura covering the cavity mentioned on the right side was adherent to the opposed upper lobe of the lung, the adhesions being recent, discoloured, and offensive. The posterior wall of the trachea, corresponding with the cavity, was of a greenish colour; otherwise there was nothing abnormal here from the epiglottis downwards.

The inner surface of the œsophagus, from the bifurcation of the trachea to the cardiac orifice of the stomach, was of a greenish colour, its epithelial layer in general slightly flocculent, occasionally thickened in patches, and entirely absent over a space an inch in diameter below the rent, the exposed surface being smooth and shining; its walls of normal consistence.

The appearances presented by the stomach were those of chronic catarrhal gastritis, and there was no indication of post-mortem softening. A black grumous material, probably metamorphosed blood, was found in the small and large intestines. The spleen was enlarged and softened—acute splenic tumour; the kidneys gave evidence of cloudy swelling, and the liver was fatty infiltrated.

In brief, it may be stated that a young man, without any pre-existing stricture or ulceration of the Œsophagus, becomes choked by a piece of meat. During the violent efforts made to expel the same, a rupture of the air passages takes place, apparently on the left side, and an emphysema arises, which rapidly extends into the neck, but which does not attract attention till just before the meat is expelled. A rupture of the Œsophagus also occurs, which becomes evident only after death.

In consideration of the symptoms of this case it is evident that there is nothing in the earlier history of the patient to call attention to disease of the Œsophagus or its immediate vicinity. The attacks of gastritis, associated with delirium tremens, are very common events in the life of a drinker, and the existence of a chronic gastric catarrh was rendered certain by the appearance of the mucous membrane of the stomach.

The vomiting of blood is mentioned in connection with these attacks. As a matter of inference it seems more than likely that the blood should have come from the lungs, in different parts of which the results of a previous inflammation were found, and an inflammation of such a character as is very generally associated with hæmoptysis. Even if this blood did not come from the lungs, its having appeared at all is of little or no value in throwing light on the lesion now being considered.

The impaction of a bit of food in the Œsophagus, and its remaining there an hour, apparently gave rise to neither nausea nor vomiting. The expulsive efforts did not suggest vomiting; it was a straining, rather, which took place, from the description, such as might occur during defecation or parturition. It is evident that the stomach played but little direct part in this process, at the most serving as a reservoir for air, as an explosive sound attended the ejection of the bolus, without being followed by the escape of food.

It seems further as if the spitting of blood, which took place during the hour of anguish, was rather to be attributed to the straining efforts than to any local changes in the Œsophagus. The redness in the face, spoken of, suggests a similar condition of the mucous membranes, and capillary hæmorrhages might readily arise from the bronchial or pharyngeal surfaces. That bloodvessels were ruptured in the air passages at this time is also suggested by the continued mucous expectoration tinged with blood, observed for some days afterwards. The blood in quantity, clotted and fluid, which followed the escape of the meat, was apparently from a different spot, presumably from the ruptured Œsophagus.

It is evident from the emphysema that tissues were actually torn during these straining efforts. Although those attending the patient first observed the swelling of the face and neck after the food was expelled, it seems not unlikely that the feeling of constriction from the shirt collar and band may have been an earlier symptom of this condition. It might be thought that this emphysema was due to the escape of gas or air from the stomach through a rent in the œsophagus, made below the meat while it was still impacted. Opposed to this view is the fact, that, during the violent straining and the obstruction of the œsophagus, the emphysema was not noticed, but constantly progressed after the œsophagus was open and the respiration relatively quiet. It seems most likely, therefore, that a rupture of the air passages was the cause of the emphysema at the outset, as it evidently was later, also that this rupture took place on the left side independently of the tear in the œsophagus, from the fact that the sub-pleural tissues and the pleural adhesions on this side alone were infiltrated with air, and there was an absence here of evidences of recent plenury. An additional argument might be derived from the external swelling being first noticed on the left side of the neck. It appears that a double rupture must have occurred within the lung in the first place to permit the air to pass upwards and make its way beneath the costal pleura, and secondly through the pleura that the adhesions might become emphysematous.

The time when the rupture of the gullet took place is not so apparent. The sole sign of its occurrence is the hemorrhage; the manner of the escape of the food is also somewhat indicative. Were the rupture present in its totality before the food was expelled, the emphysema should have occurred earlier from the stomach, and a large rent in the pleura would be expected. It might even be expected that food should have been found in the pleural cavity as a result of the extreme muscular force employed. It would also have been probable that the obstructing piece itself would have been forced through the rent, and thus hemorrhage, even vomiting, have preceded the actual escape of the fragment, and then the decided explosion could scarcely have taken place.

It may have been that the tearing of the œsophageal wall had begun before the expulsion of the food, as clotted blood followed it, but that the rupture as a whole occurred at the time of the expulsion seems most probable, from the negative evidence already presented.

The collapse following the escape of the food is in part to be referred to the preceding exhaustion, mental and physical, and in part to the hemorrhage, which continued till the time of death, as evinced by the bloody stools during life, the presence of metamorphosed blood in the intestines, and of clotted blood in the mediastinal cavity. That no large bloodvessels were ruptured, seems indicated by the small amount of blood raised immediately after the removal of the meat, and from the fact that the contents of the stomach vomited an hour later contained little or no blood.

It is a matter of considerable interest and of decided value that the only pain complained of at the outset was in the left chest after the removal of the obstruction, and which was very likely of a similar character to the tenderness on pressure over the clavicle, due to the emphysema. The sharp migratory pains on the right side, noticed on the following day, were more likely to have been occasioned by the beginning of the recent pleurisy eventually demonstrated.

Of the subsequent symptoms occurring in this case, there are scarcely any which may be considered as calling direct, exclusive attention to the oesophagus. There is neither severe localized pain nor difficulty in swallowing. Fever, diminishing nausea, and irritability of the stomach, with sensitiveness to pressure in the epigastrium, and complaint of occasional pain in the stomach, are noted. Blood makes its appearance in the vomit, the alvine dejections, and in the expectoration. The spasms of the flexor muscles towards the end of life are apparently of a tetanic character. The simultaneous disturbance of respiration suggests a similar condition of the respiratory muscles. Without considering this group of symptoms at length, it may be stated that the close proximity of the pneumogastric and sympathetic nerves to the ascertained lesion, afford opportunity for the transfer of an existing peripheral irritation, and the former nerve trunk was seen to give evidence of pathological changes in the form of enlargement and injection deserving the name of neuritis.

It has already been stated that but few cases of this affection have been recorded, and that most of these are to be considered as doubtful in their nature. Some of the references have been copied by one author from another, apparently without any effort being made to examine the record of the original observation. In the present inquiry the original source of information has always been sought for, and in most cases found. The success of this effort is largely due to the courtesy of those in charge of that extensive collection of medical works, the Library of the Surgeon-General's Office at Washington, to whom my thanks are most gratefully rendered.

The oldest case mentioned, that which, with but few exceptions, among writers, is quoted as the type of the class, lacks so much that is desired, that the diagnosis is not only not proven, but may well be regarded as incorrect. This assertion necessarily premises that the following extracts contain the essential features of the original account of Boerhaave.¹ The case is referred to somewhat quaintly by Van Swieten,² as follows:—

"We have a surprising observation given us by the celebrated Boerhaave, which is, perhaps, the only one published, namely, the illustrious Baron Was-

¹ *Atrocis nec descripti prima morbi historia.* Lugd. Batav., 1724.

² The Commentaries upon the Aphorisms of Dr. Herman Boerhaave. By Gerard Van Swieten, M.D. 2d edition. London, 1765. Vol. ii. p. 112.

sennar, Lord High Admiral to the Republiek, after intense straining in vomiting, broke asunder the tube of the œsophagus, near the diaphragm, so that, after the most excruciating pains, the aliments which he swallowed passed, together with the air, into the cavity of the thorax, and he expired in twenty-four hours."

Lieutaud¹ records the same case, but somewhat more in detail.

From him it appears that the Admiral, who was more than fifty years old, suffered an annoyance at the pit of the stomach three days after feasting sumptuously. During the efforts to obtain relief by vomiting, the sudden pain, "as from some rupture or tearing," occurred. "During the progress of the affection, he was constantly tortured with extreme pains. In the mean time the increased suffering threatened syncope; there was neither fever, cough, nor difficult breathing. The vehemence of the pains prevented any motion of the body, and there was scarcely any remission from their great severity. They seemed to be seated primarily within the chest near the diaphragm, thence extended to the back and throughout the entire chest. Finally the strength gave way, and he died suffocated, the horrid symptoms continuing. Nothing noteworthy was found in the abdomen; a large amount of gas escaped from the first incision into the pleural cavity. The lungs and heart were unaffected. A marked and unusual smell came from the chest, as if proceeding from some putrid fluid in which the posterior parts of both lungs were bathed; this fluid, amounting to six pounds, did not differ in the least from the contents of the stomach. The body having been thoroughly cleansed, there was found a transverse rupture through the œsophagus near the diaphragm."

A transverse rupture near the stomach, permitting the escape of fluid into both pleural cavities, and the association with evident decomposition, are strongly suggestive of cadaveric softening. Death within twenty-four hours after the sudden intense pain and subsequent torture, without cough, dyspnoea, or evidences of plenisy, is not indicative of a pre-existing rupture of the œsophagus, which should permit the contents of the stomach to enter the pleural cavities. Cadaveric softening might have taken place in connection with the rupture of the gullet, but evidence of the ante-mortem nature of the latter is wanting. The possibility of the existence of angina pectoris, perforating ulcer of the duodenum, even of a dissecting aneurism, might be considered, and neither the symptoms nor the post-mortem examination permit a differential diagnosis to be made.

Ziesner² is credited by some with a case of this affection, and he describes, in 1732, "a rare disease of the œsophagus." The case is apparently one of puerperal fever, with purulent inflammation of the kidneys, ovary, and liver. An abscess of the size of a butternut had broken into the œsophagus. The fifth and sixth vertebræ, near which the abscess was situated, were eroded.

More than fifty years after the occurrence of Boerhaave's case, there is published by Mr. John Dryden,³ Surgeon in Jamaica, "An account of a Rupture of the Œsophagus from the Action of Vomiting."

A strong, healthy man, on the morning after a debauch, on account of nausea drank plentifully of warm water to induce vomiting. He always guarded against emetics, and strained hard during their use, feeling sore and weak for some time after.

¹ *Historia Anatomico-Medica*. Tomus secundus, p. 311. Parisiis, 1767.

² *Haller's Disputationes ad Morborum, etc.* Lausannæ, 1760. Vol. vii. p. 629.

³ *Medical Commentaries*. Edinburgh, 1788, p. 308.

During his straining he felt something give way internally, with the sensation as if liquid had been injected into the thoracic cavity. A slight amount of blood was raised, and acute pain was felt in the region of the stomach and abdomen. The vomiting then ceased, and was followed by thirst, great heat in the stomach and thorax, constipation, and restlessness. Emphysema of the neck soon appeared. In the afternoon the pain was most severe on the left side. The breathing then became laborious; he was unable to change his position without feeling that his lungs were compressed and the fear of suffocation. Death occurred at 10 P. M. On opening the thorax air escaped, and a gallon of fluid was removed from the left side, nearly two quarts from the right. There was a longitudinal rent in the œsophagus above the diaphragm large enough to admit two fingers, and the contents of the stomach had entered the thorax and compressed the lungs.

This case is somewhat peculiar, and by no means satisfactory. The sudden, tearing pain, as in Boerhaave's patient, the sensation of injected fluid and slight hemorrhage, seem suggestive. The referring the pain to the abdominal region scarcely comports with the supposed lesion. The emphysema is more than likely to have been the result of a laceration of the air passages, and it may have been this which caused the sudden sensations at the outset. The same suspicion of post-mortem softening arises here; quantities of fluid in both pleural cavities too great to have been the result of pleuritic effusion within ten hours, and also stated to have come from the stomach. It is further to be considered that the patient lived in a hot climate, where the elevated temperature would favour a post-mortem softening of the œsophagus, and the character of the rent is not sufficiently described to determine its nature.

Reil's name is mentioned in connection with this subject, but in the work¹ referred to no case was found bearing upon the point. Kude² states, however, that this author had spoken of the conditions in describing the disease of a certain Goldhagen. Kude's³ case (probably the same) of rupture of the œsophagus is described in a thesis presented by him for the degree of Doctor of Medicine.

He reports the case as one of gangrene of the œsophagus:—

The patient fell sick with 'malignant nervous fever,' which caused gangrene of the œsophagus by metastasis. Throughout the entire course of the disease there was no complaint of pain in swallowing. On the 11th day of the disease, frequent drowsiness and weakness supervened, and the patient died after a few days.

The œsophagus, from the diaphragm to the pulmonary veins, was in a "gangrenous" condition, destroyed throughout its entire circumference, with but a few fibrous connections here and there; so that food and drink entered the thoracic cavity. From the admirable drawing accompanying the thesis, as well as from the text, it is evident that the gangrene was a simple post-mortem softening of the œsophagus.

Sedillot has been supposed to have contributed to the knowledge of this

¹ *Memorabilium Clinicorum*. Halae, 1790, vol. i., fasc. i.

² *De Morbis Ventriculi*. Halae, 1798, p. 17.

³ *Op. cit.*, p. 16.

subject, because he published¹ a case of stricture of the œsophagus, followed by rupture of the canal and a consequent gangrenous abscess. The introduction of a probang seems to have played an important part in the production of the result.

The next record of a case of rupture of the œsophagus in consequence of vomiting is that of Gnersent.²

A girl of seven years, whose previous health had been good, after a diarrhœa of several days' duration, was seized with vomiting a short time after dinner. During the subsequent two days there was nocturnal fever, mild delirium, thirst, drowsiness, and involuntary fetid yellow dejections. The drowsiness then continued, and nausea was complained of. Suddenly a violent convulsion occurred, during which the tongue was protruded, and the skin became a dark-red colour. Great feebleness followed. Gnersent saw her some hours later, when her face was a violet colour, the skin being hot and dry, the pupils dilated, and the jaws set; convulsive movements of the lips were also noticed. The pulse was full and frequent, the respiration natural, although there was an occasional cough. The application of leeches was followed by a diminution of the drowsiness, though the other symptoms continued. An emetic was administered, and the child made vain efforts to vomit. The pulse now fell rapidly, the extremities became cold, the respiration disturbed, and swallowing was painful. Partial convulsions occurred during the night; towards morning the skin became of a violet colour, the pulse failed, and the patient died.

At the autopsy the cerebral vessels were found to be engorged; a rent two centimetres long was found in the right pleura some five centimetres above the diaphragm. Pressure upon the stomach caused the escape of a fluid through this rent into the right pleural cavity, which contained a brown fluid, in which were green flocculi. The edges of the rent in the œsophagus gave no evidence of suppuration or of preceding alteration, and the stomach and œsophagus were healthy, without any trace of inflammation.

It is evident that an acute febrile disease was present, in which dark-red discolouration of the skin was prominent. Nausea, vomiting, and diarrhœa had existed for two days before the convulsions began. Painful swallowing was noticed only just before death. The clinical history suggests rather a case of scarlet fever than one of rupture of the œsophagus, and the condition found after death is much more likely to have been the result of cadaveric softening than of a rupture.

Gnersent mentions the occurrence of two analogous cases—that of Boerhaave already quoted, and one “in the second volume of the *Journal of Desault* will be printed in detail with the conclusions of the author in the early volumes of the *Memoir of the Society*.”

The cases of Boerhaave and Dryden are alluded to by Monroe,³ who states that Dr. Carmichael Smyth had communicated to him a similar case. He also speaks of having seen a preparation of the œsophagus of a child in which was a considerable longitudinal rupture. Such statements of course can have no weight where any sort of criticism is attempted.

¹ Recueil Periodique de la Société de Médecine de Paris, 1799, t. vii. p. 194.

² Bulletin de la Faculté de Médecine de Paris, 1812, t. i. p. 73.

³ The Morbid Anatomy of the Human Gullet, Stomach, and Intestines. Edinburgh, 1811, p. 311.

Bouilland¹ reports a case as one of rupture of the œsophagus, where the diagnosis is evidently so incorrect that a summary of the main points is alone desirable.

A man, 20 years of age, had a purulent discharge from the right ear since he was eight years old. There was some gastric disturbance for six weeks previous to his entrance into the hospital, and he had been confined to his bed four days immediately preceding his admission. His chief symptoms were chills, fever, headache, delirium at night, and repeated vomiting. There followed increasing weakness, intermittent right hemiplegia, dilated pupils, incoherent speech, alternating drowsiness and excitement, involuntary defections, collapse and death ten days after his arrival at the hospital.

The autopsy showed caries of the middle ear, injected cerebral membranes, and much opaque fluid in the lateral ventricles, with softened brain substance. Four perforations were found in the splenic region of the stomach, a wounded perforation of the œsophagus a little above the cardia, also a rent an inch and a half long, through which part of the contents of the stomach entered the pleural cavity, which also contained gas. Gas and fluid were found too in the abdomen.

Under the title "Observations on the Digestive Solution of the Œsophagus," King² publishes the report of a case by Mr. Conley, with the results of his examination of the stomach. He expressed himself unable to say, "if there be a rupture, where the post-mortem solution ends, and where laceration begins. I think, the probabilities considered, there was no rupture." Habershon³ offers the same case as warranting the belief that rupture of the œsophagus may take place during life. As this case was not originally presented as one of rupture, and as, after carefully examining the original record, there appears to be no good reason for doubting Mr. King's opinion, it seems unnecessary to call any further attention to the report. This paper, and another by him in the preceding volume of the Reports, deserve special mention for calling attention to the frequency of cadaveric softening of the œsophagus, and its relation to the similar condition of the stomach. Since its date, much more care seems to have been exercised in the observation of suspected cases, and an opinion is not arrived at without very cogent reasons.

A paper by Vigla⁴ on perforations of the œsophagus may here be alluded to as containing a very extensive series of cases, original and collected from various sources, with the conclusions at which he arrived. Among these there are none which can properly be included under rupture from muscular action, but all are perforations associated with various pathological conditions, and from foreign bodies, or are cases of post-mortem softening.

¹ Archives Générales de Médecine, 1823, t. i. p. 531.

² Guy's Hospital Reports, 1843, 2d series, vol. i. p. 113.

³ Pathological and Practical Observations on Diseases of the Alimentary Canal, etc., Am. Ed., Philadelphia, 1859, p. 52.

⁴ Archives Générales de Médecine, 1846, 4th series, t. xii. p. 15.

The following statement by Oppolzer¹ is of decided interest, but of slight value from its brevity.

"I have seen only one case of rupture of the healthy œsophagus. The patient had strained herself in ironing, and died of hemorrhage into the mediastinum. . . . The symptoms are uncertain, but point in general to a severe affection. A violent pain suddenly occurs on vomiting, blood is vomited, there is anxiety and a sense of oppression from the entrance of food and drink into the mediastinum. The disease may be suspected when suddenly, during vomiting, a violent pain arises in the course of the œsophagus, vomiting can no longer take place, and when earlier disturbances were present."

This case is referred to later² in about the same terms. The symptoms and means of diagnosis as recorded by Oppolzer are mentioned as possibly being the result of his own observation in the case referred to. They carry less weight, however, as Boerhaave's case is accepted in the same article.

This brief record cannot, therefore, be considered as of any value for purposes of generalization, and if its statements conflict with those of more fully recorded and better authenticated cases, they must necessarily be set aside.

Meyer³ publishes a case which he regards as one of rupture of the œsophagus from violent efforts in vomiting, there being no evidence of preceding ulceration, abscess, or gangrene. Not having been able to obtain the original account of this case, the following statement⁴ is inserted, which is "as complete as possible."

"A shoemaker, thirty-eight years of age, a drinker, on account of having taken lye when a child, had suffered since then from difficulty in swallowing; the food would stop near the pit of the stomach, and violent efforts were required for its dislodgment. Of late this difficulty had increased. February (?) 1, 1858, while at dinner, a piece of sausage stuck in the usual place. Violent efforts were made to remove the food, during which his anxiety became so extreme that he ran outdoors. Repeated attempts at vomiting were made; about a cupful of bright red blood followed, but the sausage could not be raised. Anxiety, a feeling of oppression, and epigastric pain became so extreme, that the patient returned to his house. About an hour after the beginning of the attack, a swelling appeared in the right side of the face. A physician, thinking the food to be still impacted, gave an emetic, and introduced a probang, without any benefit, for the patient did not vomit, and his difficulties increased.

"He was received into the hospital on the 2d of July, at noon. His condition then was as follows: He could be put to bed only in the upright position, with the body bent forwards. The face was pale, slightly cyanotic. There was emphysema of the right side of the face, of the neck, of the entire front of the chest, the sternum excepted. There was a clear resonance on percussion of the chest, and an abnormally diminished resistance. Behind, on the right, there was diminished resonance from the ninth rib downwards, above this point it was normal; behind, on the left, percussion was impossible, on account of the emphysema. There was good vesicular respiration everywhere, except behind at the base, where the breathing was indistinct. Local fremitus indistinct below

¹ Wiener Medizinische Wochenschrift, 1851, p. 65.

² Oppolzer's Vorlesungen über specielle Pathologie und Therapie, von Stoffela. Erlangen, 1872, vol. ii. p. 150.

³ Medicinische Vereinszeitung in Preussen, 1858, Nos. 39, 40, 41.

⁴ Canstatt's Jahresbericht, 1858, vol. iii. p. 334.

and behind. Respiration 40. Impulse of the heart feeble, but in the usual place. Sounds distinct. Pulse small, soft, 142. The patient complains of a very violent squeezing pain, which proceeds from the base of the ensiform cartilage to a spot one-half an inch below its point, thence extends backwards to the spine. This pain is increased by attempts to sit upright, or to bend backwards. The spine is not sensitive to pressure. *Diagnosis:* Rupture of the œsophagus; moderate pleuritic effusion in the right pleural cavity, probably in the left likewise. Emphysema of the skin dependent upon the rupture of the œsophagus.

"Sinapisms and ice to the chest, also ice internally gave no relief; the emphysema increased, the pains in the chest and along the spine became more severe; fluids could be swallowed, but only in small quantities, on account of the extreme desire for air. Swallowing produced a feeling of compression near the cardia. At 2 P. M. on the 3d the patient died, the disease having lasted fifty hours.

"*Autopsy.*—The œsophagus free throughout almost its entire extent. A gaping, ulcerated surface one and one-fourth inch long and three-eighths of an inch wide was observed three inches above the cardia, in the anterior wall of the œsophagus; the edges were tolerably smooth, in places sharply defined as if the ulcer had been cut out. The mucous membrane more extensively destroyed than the muscular coat, from which it could be easily raised, and its edges were not thickened.

"The submucous tissue in the vicinity of the ulcer was of ordinary consistence, and not specially thickened. The muscular coat was distinct to the very edge of the ulcer, in the alcoholic preparations showing the same colour and configuration as in the other healthy portions, and the microscopical examination, though not showing distinct muscular elements, yet establishes the identity with the healthy portions. The coats in the immediate vicinity of the ulcer are not softened. The rest of the œsophagus is somewhat widened; above the cardia it is somewhat narrow, but without distinct cicatricial tissue, the muscle here being hypertrophied.

"The mucous membrane below the great gaping wound presents numerous small, linear, yellow streaks from one-half a line to two lines long, which are parallel to the long axis of the gullet. With the microscope these are found to be composed of an amorphous substance, without epithelium. The subjacent mucous membrane is normal.

"A large gangrenous cavity extended forwards from the perforation into the posterior mediastinum, separating the œsophagus from the cardia upwards for five and one-half inches from its surroundings; it contained dead tissue, and numerous particles of food, and its wall gave no evidence of a chronic thickening. There was exudation, etc., in both pleural cavities. The stomach and intestines were distended with gas, etc."

A dissertation upon rupture of the œsophagus is published by Grammatzki,¹ and is extracted by Gerhardt.² The subject is illustrated by a case occurring in Leyden's clinic, regarded as one of spontaneous rupture in a previously healthy person.

"An English machinist, John Mudd, thirty-five years old, six weeks ago suffered for some time from gastric disturbance, from which he recovered. June 15, 1867, after carousing the night before, he was seized at 7 A. M. with vomiting, mixed with blood, violent pains in the stomach, coldness of the extremities, and a collapsed appearance—with repeated vomiting again after nine o'clock. After this second attack of vomiting, which was also bloody, the neck began to swell. The patient ascended the steps of the hospital without assistance, and spent

¹ Ueber die Rupturen der Speiseröhre. Königsberg, 1867.

² Jahresbericht der gesamten Medicin. Virchow und Hirsch, 1867, vol. ii. p. 144.

the rest of the time bent forwards in an easy chair, till his death at 6.30 in the evening. His face expressed anxiety and pain, there were frequent groaning, emphysema of the cheeks, eyelids, neck, and front of the chest, somewhat more marked on the right, but the arms and sides were free from it. Violent pain and increased dyspnœa resulted from swallowing. Percussion and auscultation gave no special information. In the afternoon decided collapse supervened, cold sweats, pulseless extremities, a bending back of the head, increasing cyanosis, and asphyxia. At the autopsy there was found a double pneumothorax, and in each pleural cavity were six to eight ounces of a reddish fluid, in which were solid particles and fat drops. The tissues of the anterior and posterior mediastina were filled with air. Above the cardia was a cavity of the size of a walnut formed from a greenish-black, frangible tissue, which communicated with the pleural cavity by a large hole, through the pleura, of the size of a four-groshen-piece. On the other side there was a wound, through the wall of the œsophagus, five centimetres long. This was longitudinal, like a tear, with sharp edges, and enroached upon the stomach below. A similar wound, extending only to the submucous tissue, was found upon the anterior wall of the cardia, for the most part within the cavity of the stomach. These wounds of the œsophagus were attributed by Leyden to some foreign body which had been swallowed, and were considered to be explanatory of the illness six weeks before. It was left undecided whether the vomiting on the morning of the last illness was the cause of the perforation or a symptom of it."

Strictly speaking, this can hardly be regarded as a pure case of spontaneous rupture of the œsophagus from muscular action. Leyden's opinion that a rupture had occurred, necessarily carries great weight, though the description of the opening into the pleural cavity suggests endarteric softening rather than rupture. If the vomiting and the rupture occurred simultaneously, as is suggested, and the contents of the stomach had then entered the pleural cavity or cavities, pneumothorax should have made itself manifest before the autopsy took place; but no special information was obtained by auscultation and percussion. Even supposing it to be one of sudden rupture, the assumed previous injury to the œsophagus from a foreign body would remove it from the more spontaneous forms in healthy gullets. A further possibility may be entertained that this was a case of combined rupture and post-mortem softening. A microscopical examination of the edges of the wound might have been of considerable service in eliminating post-mortem agencies, though the presence of the contents of the stomach in the pleural cavities gives opportunity for the dissolving material to act upon the edges of an actual rupture.

Finally Charles¹ reports a case of "Rupture of the Œsophagus; with Remarks thereon."

"The patient was a man, 35 years of age, who from infancy had been occasionally distressed with difficulty of swallowing. He was of intemperate habits, and had been drinking to excess for a few days before his death, and it was suspected that some of the whiskey had been medicated. At 8 P. M., after a light dinner and while exercising a horse, he felt something give way inside of him during attempts to vomit. He reached the house with difficulty, and fell on the floor in great agony. The pain, first felt in the region of the left kidney, ascended towards the stomach and back of the chest, became more severe, and there was much retching. Dyspnœa and thirst ensued, the patient became

¹ Dublin Quarterly Journal of Medical Science, 1870, vol. 1. p. 311.

delirious, the pulse, previously strong, suddenly failed, and death took place seven and a half hours after the vomiting first appeared. The autopsy was made twenty-nine hours after death, the weather being tolerably warm, and on turning the body dark fluid escaped from the mouth. At the left side of the œsophagus, near the posterior wall, a longitudinal rent was found, an inch and a half in length, extending from immediately below the cardiac orifice of the stomach upwards. This led into a space in the posterior mediastinum which contained black grumous matter like that in the stomach. The space communicated with the left pleural cavity by a round opening, through which the contents of the stomach could be pressed into the left pleural cavity. The left pleura was blackened along the lower two-thirds of the posterior mediastinum, and the left pleural cavity contained two quarts of dark offensive fluid containing starch and oil. In the right pleural cavity there was found a quart of fluid appearing like bloody serum. The mucous membrane in the cardiac end of the stomach was very soft and of a dark hue."

That post-mortem softening was present in this case is evident, and is admitted by Dr. Charles. He thinks, however, that a rupture of the œsophagus preceded death. The opinion seems to be based mainly upon the sensation of internal laceration, the appearance of the rent, a theory of its causation based upon an analogy with doubtful cases of laceration of the stomach, and the knowledge of previously recorded cases, among which Dryden's occupies a prominent place from its obvious resemblance.

A subjective sensation becomes of real value only when its cause is made clear, and this is plainly in dispute. The intense pain complained of was not referred at first to the œsophagus, where the tearing is assumed to have taken place, but to the left kidney. If the injury had occurred during the early vomiting, a sufficient time intervened to permit evidence of inflammation of the pleura covering the mediastinal cavity. The appearances of the edges of the wound would evidently depend largely upon the length of time they were in contact with the gastric fluids, as well as on the degree of concentration of the corroding agents. Hemorrhages into the mediastinum, and the vomiting or raising of fresh blood, both likely to have taken place, were not observed. The nature of the laceration of the stomach referred to, may be regarded as equally, if not more, in doubt than the condition in question. If Dryden's case can be considered in dispute, as well as some of the others referred to, Dr. Charles's case must be considered as still in doubt.

The disturbing element in most of these cases is evidently the softening of the stomach and œsophagus.

Previous to the year 1786, when Hunter published his observations on the self-digestion of the stomach, the possibility of a perforation of this organ otherwise than as a result of pathological conditions was not thought of. It is consequently very evident why Boerhaave and Dryden should not have considered this feature differentially. The latter ought to have done so; the fact that he did not suggests that Hunter's observations were not familiar to him. Even after these had been published, there were many authorities, French and German particularly, who disputed his views and spoke of softening of the stomach as a disease. The value of King's

papers, already referred to, was very direct, therefore, in calling renewed attention to Hunter's work, and in showing that the œsophagus was exposed to the same alteration.

The most important contribution to this subject since Hunter's time is unquestionably that of Elsässer (1846), who showed experimentally and otherwise that an acid fermentation of the contents of the stomach was the main element in producing the softening and perforation. Among recent authorities who advocate an ante-mortem softening of the stomach and œsophagus is Hoffmann.¹ He maintains as of this nature the brown form of gastro-malacia, that which is observed among adults, though met with in children also, and regarded by most observers as not differing from the gelatinous form except in the presence of injected bloodvessels.

He considers that a number of cases observed by him elevate this opinion to a certainty. He further maintains that this form of softening, usually if not always, is the result of a hemorrhagic infarction, the presence of acid gastric fluids causing a maceration of the altered parts. As the cases reported are regarded as including a pre-existing localized pathological process as a cause for the rupture, their consideration does not fall within the province of this paper.

The number of indisputable cases of rupture of the œsophagus under the conditions mentioned, may be considered as two, possibly three: those of Meyer and Allen, and those of Grammatzki. The similarity of the symptoms in the last case to those in the others is unmistakable, and their occurrence in a future one would point very strongly to the lesion in question. At the same time the case is not sufficiently fully reported in the abstract, nor is it sufficiently freed from the suspicion of post-mortem changes, to permit its use in the further consideration of this subject.

As the cases of Meyer and Allen are, therefore, the only ones (Oppolzer's being merely an allusion) from which a knowledge of this class of spontaneous ruptures could be obtained, it follows that the statements to be found in the text-books and elsewhere, previous to 1858, are to be considered as essentially theoretical. It may be said that they are based upon errors of observation, insufficient testimony, and superficial generalizations. That such a statement can be made indicates merely that in some respects the opportunities for criticism are greater now than was the case twenty years ago and earlier. It may also be regarded as premature that an attempt should here be made to present the history of an affection which has offered so few opportunities for its study. This article is intended mainly as a means of assistance for those who may hereafter acquire an interest in the subject, and who may find it difficult to obtain some of the necessary data.

Rupture of the healthy œsophagus in a person free from disease may

¹ Virchow's Archives, 1868, xliv. p. 352, and 1869, xlv. p. 124.

take place as a rare occurrence. Such ruptures are quite independent of and distinct from the lacerations and other traumatic injuries produced by the contact of unyielding foreign bodies. The rupture takes place between the bifurcation of the trachea and the diaphragm, in the anterior or lateral walls of the œsophagus, and corresponds in direction with the long axis of this tube. Such rents lie wholly within the thoracic cavity, are from one to two inches in length, and are distant from, rather than near to, the cardiac orifice of the stomach. Though it is not impossible that the tearing of the tissues may extend through the pleuræ, one or both, such an event is very unlikely and of doubtful occurrence. There are two factors essential: the impaction of a foreign body in the œsophagus, and the exercise of great muscular force in the attempts to remove it. There is no good reason for considering that the act of vomiting can in any way produce this result, nor is it essential that the foreign body should remain in contact with the œsophageal wall long enough to give rise to inflammation from pressure. The fact of muscular action alone being sufficient as the active agent is of considerable value from a medico-legal point of view, in those cases where the introduction of a probang or a bougie may be asserted as the cause of the rupture.

Those persons in whom this lesion has been met with have been drinkers, and have suffered from various disturbances of digestion. There is no reason to suppose, however, either that the excessive use of alcohol as such, or the digestive disturbances have been special predisposing causes of any marked importance.

Soon after the impaction of the foreign body, as a piece of meat or a bit of sausage, and the unsuccessful attempts at its removal, intense anxiety becomes evident on the part of the patient. Violent straining efforts are made to expel the obstructing body. The chest is fully inflated, and powerful efforts are made by the respiratory muscles. More or less blood is ejected during this period, either mixed with saliva and mucus, or raised in considerable quantities as a bright red fluid. In the course of an hour usually an emphysema makes its appearance in the neck and face, which probably comes from a rupture of the air passages during the violent straining. The hæmoptysis is probably from a similar source. The impacted substance is either eventually expelled or makes its way downwards; if expelled, it may be immediately followed by a decided explosive sound, though not necessarily by the contents of the stomach. The regurgitation of fluid and clotted blood, mixed with air or food, after the evident displacement of the foreign body, gives evidence of a laceration of the œsophageal wall, though the extent of the same cannot be determined.

Pain is not a very prominent early symptom. When present it is referred to the region of the stomach, and later to the emphysematous parts. It has not been found to be of a tearing character, nor is suddenness one of

its features. A varying degree of epigastric pain and tenderness continues during the subsequent course of this affection, extending from the ensiform cartilage to the spine, and increased on bending backwards. Pains of another character, sharp and stabbing, supervene where the pleura becomes inflamed, as it may, from the extension of the inflammation from the mediastinum, either by continuity of tissue or as a result of laceration.

Nausea and vomiting are not prominent features, though blood is occasionally vomited, either pure or mixed with the contents of the stomach. Liquids may be swallowed without pain, though a feeling of constriction is at times excited by their passage downwards. The patient falls into a condition of great exhaustion after the violent straining, from which he rallies in the course of twenty-four hours, when fever is evident. The emphysema advances, the patient has difficulty in breathing, there may be orthopnoea even, also slight cyanosis, and death may occur within fifty hours, or may be postponed for seven or eight days. When the disease assumes a protracted course, it is essentially a gangrene of the mediastinum combined with gangrenous pleurisy; there are continued fever, great prostration, mild delirium, pains in the stomach and chest, and bloody stools after a time. Tetanic convulsions may occur if the inflammation in the mediastinum involves the nerves along the spine.

Many of the symptoms occurring in these cases are apparently those resulting from the emphysema. At the outset there is little to call direct attention to the Œsophagus except the impaction of the food and the eventual hemorrhage, and nothing to determine absolutely the fact of a complete rupture at the time of its occurrence. Later the symptoms are essentially those of a septicæmia. The diagnosis is likely to be attended with considerable difficulty, and death is the result.

Hamburger says :—¹

“ We must admit that up to the present the diagnosis is first made upon the corpse, and often contrary to all expectation, “ to which it can be added that even then the diagnosis may be attended with very great difficulties.” We believe, however, that, by auscultation of the Œsophagus during the act of swallowing, the most valuable assistance may be obtained. The place where the perforation has occurred may be exactly designated when the difficulty in swallowing is relieved, and the fluids swallowed reach a certain point only, beyond which they cannot be recognized. Sometimes a slight blowing sound is heard at this point on swallowing. This method is applicable only to those cases where the rent is sufficiently large to permit the liquids to pass through. If the opening is too small for this, there is then no communication, and the rupture runs a latent course.”

This suggestion is of value in so far as it offers a new application of the auscultatory method, and it has apparently proven satisfactory in certain cases of perforation. The objection raised by Oppolzer, that the usual condition of the patient is not likely to permit the employment of

¹ Klinik der Œsophagus Krankheiten. Erlangen, 1871, p. 189.

this means of diagnosis, is hardly applicable to cases of the character here referred to. He also suggests, as a precaution, that only small quantities of fluid should be swallowed. The patient, however, is either inclined to take fluid in small quantities, or else suffers no apparent inconvenience from larger amounts.

Boston, Nov. 1876.

ART. II.—*A Contribution to the Study of Animal Temperature.* Preliminary Note. By ROBERTS BARTHOLOW, M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the Medical College of Ohio.

IN some "experiments of control" during a course of investigations into the actions of antipyretic medicines, I ascertained that the temperature of rabbits confined in a Czermak's support declined sensibly. If complete immobility of the animal be secured, the rectal temperature begins at once to lessen, and in an hour the declination has reached easily measurable proportions. After some hours the decline of temperature is very marked. The observations were taken with an Arnold's clinical thermometer, which, as I am informed by the maker, compared with the Greenwich standard. Such comparative tests as I applied indicated that the thermometer used was fully up to the average of accuracy of the most carefully constructed clinical thermometers. The Czermak's support, made in the usual way, held the rabbit quite immobile. The temperature of the laboratory and of the rabbit's rectum was taken before the animal was placed in the apparatus. It was found that the rabbit's temperature declined in a nearly uniform ratio.

Expt. 1. Rabbit of four months; weight 34 ounces. Temperature of the air 80° F. Temperature of the rectum 102° F. Fastened in the support.

At the end of the first hour the rectal temperature was	101° 5
At the end of the second hour "	101°
At the end of the third hour "	100°
At the end of the fourth hour "	99°

When released from confinement the rabbit crouched in a corner, the limbs being still and swollen. At the end of the first hour of freedom, when the rabbit had recovered in large part from the immediate effects of the confinement, the temperature of the rectum had risen to 102°. In oscillating from the lowest point the temperature did not stop at the normal, but passed to the other side, reaching in three hours 103°, and in six hours 103° 5. At the expiration of twenty-four hours, when I had arranged to repeat the experiment with the same animal, I found the temperature still at 103°.

Expt. 2. Same rabbit as in preceding observation. Temperature of the air 82°. Rectal temperature 103°. Fastened in the Czermak support. Notwithstanding the abnormal elevation of temperature, the decline in body-heat,

under the influence of complete immobility, was in nearly the same ratio as before.

In one hour the rectal temperature was	.	.	.	.	102°
In two hours " " "	.	.	.	.	101°
In three hours " " "	.	.	.	.	100°
In four hours " " "	.	.	.	.	99°

After release from confinement, in an hour the rectal temperature was 102°·5; in three hours was 103°.

A number of experiments of the same kind with rabbits yielded the same results. Observations with pigeons also demonstrated that complete immobility of the body causes a decline in the temperature of birds. A pigeon may be secured without injury by folding the wings, extending the legs, and then wrapping it in strong paper, leaving a sufficient orifice for the admission of air. The temperature was taken by introducing the thermometer deeply into the gullet.

Expt. 3. Pigeon, fully grown, prepared as above described. Temperature of the air 81°. Temperature of the gullet 107°.

In one hour the temperature of the gullet was	.	.	106°·5
In two hours " " "	.	.	106°
In three hours " " "	.	.	105°
In four hours " " "	.	.	104°·5

After an hour of freedom the temperature of the gullet was found to be 107°, or normal. So decided a fall of temperature did not take place in all cases, due, I think, to the great freedom allowed the head and neck in order to secure the admission of air. The decline in temperature was never less than one degree, and usually reached two degrees.

The fact being ascertained that immobility of the body causes a decline in the body temperature, it is obviously necessary to take this result into account in studying the action of antipyretic medicines. Dr. J. L. Anderson, my assistant, and I have made a number of observations to ascertain the gross effects of immobility and of the action of the antipyretic medicine.

Expt. 4. Rabbit; weight 66 ounces. Rectal temperature 102°. Administered, subcutaneously, fifty minims of the official tincture of digitalis. Placed in the support.

In an hour the rectal temperature was	.	.	.	98°·5
In an hour and a half the rectal temperature was	.	.	.	98°
In three hours " " "	.	.	.	97°·8

Expt. 5. Rabbit; weight 64 ounces. Rectal temperature 102°. Injected under the skin 20 minims of the official tincture of aconite root. Placed in the support.

In ten minutes the rectal temperature was	.	.	.	101°·5
In twenty " " "	.	.	.	101°·2
In forty " " "	.	.	.	100°·6
In an hour " " "	.	.	.	98°·5

Expt. 6. Rabbit; weight 64 ounces. Rectal temperature 102°. Injected, subcutaneously, five minims of the official tincture of veratrum viride. Placed in support.

In twenty minutes the rectal temperature was	.	.	100°
In forty " " "	.	.	98°
In an hour " " "	.	.	97°·5

Expt. 7. Rabbit; weight 70 ounces. Temperature of the air 76°. Rectal temperature 103°. Injected, subcutaneously, twenty grains of chloral. Placed in the support.

In one hour the rectal temperature was	.	.	.	.	101°
In two hours " " "	.	.	.	.	99°
In three hours " " "	.	.	.	.	96°
In six hours " " "	.	.	.	.	93°

Expt. 8. Rabbit; weight 64 ounces. Temperature of the air 71°. Rectal temperature 102°. Injected under the skin twenty grains of chloral. Placed in the support.

In one hour the rectal temperature was	.	.	.	.	98°
In two hours " " "	.	.	.	.	96°
In three hours " " "	.	.	.	.	95°

It is, of course, perfectly well known that the temperature of rabbits may be reduced by chloral very much below the point mentioned above.

It is a very curious fact that an agent like atropia, which increases the action of the heart, and raises the arterial tension, causes a decline of temperature in the rabbit, if administered in sufficient quantity to produce paralysis and consequent cessation of voluntary movement. I am indebted to my assistant, Dr. Anderson, for a number of observations made in my laboratory with atropia. I select one experiment to illustrate this point.

Expt. 9. Rabbit; weight 64 ounces. Temperature of rectum 102°. Temperature of air 78°. Injected under the skin one-half grain of atropia. Allowed to run about the laboratory.

In one hour the temperature of the rectum was	.	.	103°
In one and a half hours the temperature of the rectum was	.	.	103°

The rabbit was then fastened in the support.

In thirty minutes the rectal temperature was	.	.	102°
In fifty " " " "	.	.	101°·5
In an hour " " " "	.	.	101°
In one and a half hours the rectal temperature was	.	.	100°·5
In four hours " " " "	.	.	98°

Expt. 10. Rabbit; weight 62 ounces. Temperature of the rectum 103°. Temperature of air 78°. Injected, subcutaneously, two drachms of alcohol.

In five minutes the rectal temperature was	.	.	104°
In fifteen " " " "	.	.	103°·5
In forty-five minutes the rectal " " "	.	.	102°
In an hour " " " "	.	.	101°

My notes say that in five minutes there was "muscular paresis with excitement," and this corresponded to the maximum elevation of temperature. When "complete muscular relaxation" ensued, "with dilated pupils," the temperature declined.

It appears to be established, from the foregoing facts, that any agent producing complete muscular relaxation, whatever its mode of action in other respects, causes a decline in temperature; and the more complete the immobility consistent with the maintenance of respiration and circulation, the more decided the reduction of the body-heat. It must be obvious to every intelligent reader that I do not mean to include in the

above formula all antipyretics, for the mode in which these agents depress temperature varies greatly.

The lowering of the temperature caused by the maintenance of an immobile condition of the body is overcome by artificial heating. For the purpose of this inquiry I employed a hot-air chamber, large enough to contain the rabbit support and an apparatus for maintaining a uniform heat. The temperature of the chamber was registered by a thermometer projecting into the interior, the scale being external. The results were so uniform that I need not now occupy space in detailing the individual observations. The experiments as narrated above were first made, and then without delay the rabbits were placed in the hot-air chamber, the thermometer *in situ*. The temperature of the hot-air chamber was usually 130°. Several observations were made with the air of the chamber at 160°. The rise of temperature which followed the introduction of the animal into the hot air was more rapid when the temperature of the hot-air chamber was at the maximum. The results of heating were constant, and I state the averages:—

In fifteen minutes the temperature rose	.	.	.	0° 5
In thirty minutes “ “ “	.	.	.	2°
In one hour “ “ “	.	.	.	3°.5
In two hours “ “ “	.	.	.	1° to 2°

above normal.

The same results were obtained when the temperature had been reduced by the antipyretics, as detailed above. When the temperature had, by artificial heating, been raised to normal, it declined again when the rabbit was placed, still in the support, in the external air.

120 WEST SEVENTH STREET, CINCINNATI, O.

ART. III.—*The Treatment of Certain Injuries of the Head, accompanied by Lesions of the Brain and its Membranes.* With illustrative cases. By W. B. RODMAN, M.D., of Frankfort, Ky.

SINCE surgery has been an art, its authors, teachers, and practitioners have differed widely in their views of the proper treatment for the various wounds of the skull. The subject of simple fracture with depression (with or without symptoms of compression of the brain) has been an especial ground of contention. I believe that most surgeons are agreed on the treatment of compound fracture of the skull with depression, but very few of them dare to treat a simple fracture as they would a compound one. They fear that hemorrhage, inflammation, erysipelas, and encephalitis in its various forms, will supervene if an incision is made when the fracture

is simple. My object in writing this paper is to show that these dangers are more *traditional* than *real*; that more lives have been sacrificed and minds left permanently impaired from fear of making an incision, so that the actual condition of the bone might be thoroughly known and thereby remedied, than have been lost from an opposite course of treatment; that even conservative, or rather *non-operative* surgery may be carried to an extreme; that the danger of making a compound out of a simple fracture has been greatly overrated by the older writers, and that we of the present day have blindly accepted their views as infallibly correct.

No doubt that Cooper, Abernethy, Dupuytren, and others wrote as their reasoning from observation of cases prompted them. They saw compound fractures of the skull and those simple fractures made compound by the surgeon do badly.

These men treated all injuries of the head when brain trouble existed, or was apprehended, by general bleeding, comparative starvation, tartar emetic, and calomel. Under this plan, even the simplest wound of the scalp would be predisposed to slough, to take on a low grade of inflammation, or be attacked by erysipelas. Let us see for one moment if these dangers are common under a more rational treatment. I grant that bruised, lacerated, or punctured wounds of the scalp will take on just such action as wounds of the same character in other parts of the body. But are these the wounds a surgeon would make in incising the scalp in his endeavour to learn the exact condition of the broken bone beneath? What is the usual consequence of an incised wound of the scalp? Union by first intention if properly treated.

On page 15, Part 1st, *Surgical History of the War of the Rebellion*, this language will be found:—

“Of the two hundred and eighty-two cases of incised wounds of the scalp above recorded, six terminated fatally. . . . An examination of the record in each individual case indicates . . . that three died from some form of encephalitis, directly resulting from the injuries received.”

As others were discharged for mental aberration, vertigo, imperfect vision, headache, persistent pain at the seat of injury, it is reasonable to suppose that in these cases there was something more than a simple incised wound of the scalp; in other words, that the three who died, and those who suffered, as mentioned above, had their *skulls fractured* by the sabre, which inflicted the incised scalp wounds. The three other deaths are recorded as having occurred from causes totally independent of the wounds received. This statement does not show that an incised scalp wound is such a dreadful affair.¹

¹ The case of Harrison G. Campbell (page 4) will appear remarkable to those who so firmly believe that scalp wounds are particularly liable to erysipelas. This man had a scalp wound. Erysipelas attacked the left leg (upon which there was no wound), and from this part extended to his body, other leg, throat, and face. He died without the scalp wound ever having become erysipelatous.

It may be said that an incised wound of the scalp, without a fractured skull, is a very simple affair; but that when it accompanies or complicates a fractured skull it renders the latter more dangerous. How so? Is there any special danger in the scalp wound *per se*? Is there here any hidden source from which innumerable agents may spring, bringing in their train erysipelas, inflammation, abscess or hernia of the brain? I contend that an incised wound made by the surgeon for the purpose of ascertaining the exact condition of a fractured skull is harmless. If the fracture is not extensive, or depressed enough to require trephining, or raising, or removing the fractured bone, the simple incision can do no harm. If the reverse be the case, I pity the patient who falls under the care of the surgeon too timid, too faint-hearted to make the necessary incision, even if he renders a simple a compound fracture.

It is proper at this point to discuss the opinions and teachings of Gross and Erichsen (who have probably more influence over the practice of surgery in America than any other writers or teachers).

Gross (*Syst. Surgery*, 1872, vol. ii. p. 133-4), speaking of the treatment of compression of the brain by depressed bone, says:—

“When compression is produced by depression of bone, attended with compound fracture, immediate recourse should be had to trephining. . . . The question is still an open one as it respects the treatment of compression from depression attended with simple fracture. . . . I am disposed to regard operative interference as justifiable only in the event of extensive depression, and I should adopt this plan whether the symptoms of compression were urgent or not, on the ground that the patient would be much less likely to suffer from subsequent cerebral disorder.”

Page 146, under the head of Simple Fracture with Depression and Symptoms of Compression, he says, speaking of delay and immediate operative interference:—

“Unfortunately experience, always the best guide in such matters, has not fully decided the question as to which of these two plans should be preferred. . . . But I am decidedly in favour of immediate trephining, on the ground that while the *operation adds but little to the risk*¹ of the case, the patient has a much better chance of prompt recovery. As long as the bone is depressed, even supposing that the compression is removed, there is danger of inflammation of the brain and its envelopes, to say nothing of the occurrence of epilepsy and other nervous affections. . . . My opinion then is, that operative interference, early and efficient, is, as a rule, the only proper plan to be pursued under such circumstances.”

If Prof. Gross intends to convey the idea that he would *not* operate when he says, as above quoted, “I am disposed to regard operative interference as justifiable only in the event of extensive depression, and I should adopt this plan; whether the symptoms of compression were urgent or not,” etc., there is a decided conflict in his opinions. The sentence is, at least, ambiguous.

¹ The italics are mine.

Page 146, 1st line, speaking of simple fracture with depression of bone (without symptoms of compression), he says:—

“Upon this subject (treatment) surgeons have been divided in opinion, some favouring, others condemning operative interference; favouring, because of the dreaded primary and secondary effects; condemning, because a simple fracture is thus converted into a compound one.”

Dr. Gross would here be guided by the degree of depression; if slight, would not interfere; if very decided, he would. He closes this paragraph with these remarks:—

“A man labouring under such an affection [depressed bone] is never free from danger; he may get well, or be well to all appearance, and yet be only partially cured, subject, at any moment, to have his life and mind imperilled by the broken bone. It is like the sword of the tyrant suspended over the head of his subject.”

What is the treatment almost universally recommended in compound fracture with depression of bone, with or without symptoms of compression? To relieve the depression at once by trephining, if this be necessary, but at any hazard to elevate or remove all depressed bone. Yet if depression occur in a simple fracture, it must be let alone, unless it is evident that the patient will die, and that soon! It is asking too great a risk of the surgeon to make a simple incision down to the fractured bone, and see the exact condition of it; for, by so doing, he is making a compound fracture out of a simple one, and there is danger of inflammation!

It took the profession nearly one hundred years to learn that hot drinks and starvation would not cure a fever patient. How long will it take them to find out that a simple fracture of the skull should be treated as a compound one; and that a depression of bone under a scalp intact, is as dangerous, if let alone, as the same amount of depression under a cut six inches long?

The special dangers of compound fracture are said to be shock, inflammation, and fungus of the brain. Probably if an even number of fractures, both simple and compound, were analyzed, shock would be found to predominate in the latter; not because they are compound merely, but because there would be naturally in compound wounds more injury to the skull bones independent of the scalp wound. The compound fractures of the skull are, in civil practice, rarely accompanied by clean incised wounds, but the scalp wound is generally lacerated, bruised, or punctured. This class of wounds almost invariably suppurate, and thereby they might, to a slight extent, prejudice the chances of recovery by interfering with the brain. But a simple incised wound should heal by first intention, and in no wise interfere with the perfect recovery of the brain and its membranes. Will any one contend that a simple incised wound is, in itself, the least responsible for fungus cerebri? Unless there is decided depression of bone and some laceration of dura mater, fungus will hardly occur. In the event that there is sufficient depression of bone and laceration of dura mater, to

let the brain escape beneath the scalp, I venture to say that death is inevitable, unless the bone is raised; and this cannot be done without an incision, which makes a compound out of a simple fracture. I think it would do well to put these imaginary horrors of compound fracture along with that which the laity so much dread, viz., "taking cold in the cut."

Erichsen, Philadelphia, 1869, page 347, says:—

"If there be no wound in the scalp, but the occurrence of symptoms of compression and the existence of some irregularity of the skull at the seat of injury lead the surgeon to suspect a depressed fracture, he should make a crucial or T-shaped incision down upon the part in order to examine the bone, and if this be found depressed to elevate or remove it."

Page 348, fourth line: "In those rare cases in which there is depressed fracture without symptoms of compression or even a wound of the scalp, the line of practice is still unsettled as to whether the depressed portion of bone should be left where it is, or an attempt be made to elevate it."

Erichsen, in these last-mentioned cases, seems biassed by the opinions of Cooper, Abernethy, and Dupuytren, who adopt the expectant plan, but he does not adhere strictly to their advice, but remarks further on: "I think, however, this expectant practice should not be followed too implicitly, but that we must be guided by the circumstances of the particular case." I would say in all cases of doubt as to whether there was depressed bone or not, make an incision—it can do no harm—having done this, treat the fracture as you would a compound one—there is no doubt about the treatment then, because all are agreed on immediate interference in compound fractures. I know, or at least have reason to believe, that persons (especially children) have fully recovered without depressed bone being raised; but this result is an exception to a very general rule. In adults it occurs but very rarely.

Although my experience is rather limited, I will relate a series of cases which have made an indelible impression on my mind, and have strengthened my convictions as to the proper treatment of skull fractures:—

CASE I.—John Newman, age 16, was thrown from a horse on April 22d, 1876. Falling, he struck violently upon the left side of his head on a round stone in the bed of a branch. This was four miles from Frankfort. I saw him at 9 A. M., one hour and a half after the accident. He had symptoms of concussion of the brain, would answer when spoken to, and several times, with assistance, arose from a lounge and walked across the room to a fireplace and vomited. When asked what hurt him, he said his head, and would put his hand over the injured part. I found a great puffy tumour of the scalp, almost as large as one's hand, extending from the left ear to within a short distance of the sagittal suture, and almost as broad as long. *There was no wound of the scalp.* The scalp tumour was puffy, yet firm; so much so that I was unable to feel whether the skull bone was broken and depressed. From his condition I concluded that he could be carried to his own home, two miles nearer town, and I directed that this should be done on a litter. In the mean time I returned to town for instruments and assistance. When I reached him the second time I found that he had been brought the distance of two miles in a buggy, and not on a litter as I had directed. He had, however, rallied so much from

the concussion that he was able to talk, and to hold a conversation with the priest during the rite of extreme unction.

Notwithstanding this was a simple fracture with no symptoms of compression, and although I was unable after careful manipulation to detect any fracture, I determined to cut down upon the bone at once. Chloroform having been sparingly administered, I made an incision extending from the ear to within two inches of the sagittal suture. When this incision was carried to the bone, or rather where the bone had been, there was such a terrific gush or spurt of blood and brain that I thought the boy would die then and there. I thought that the middle meningeal artery or the lateral sinus, or both, had been ruptured. (A fissure in the bone ran across the course of the lateral sinus, and a large branch of the meningeal artery was ruptured.) Having made a T-shaped incision and reflected the scalp, an enormous fracture came into view. Two pieces of broken bone, each as large as the bowl of a teaspoon, were projecting perpendicularly into the brain from the anterior edge of the fracture. They had lacerated the dura mater fearfully, and had crushed out nearly half an egg-shell full of brain. Several other pieces, much larger in the aggregate than the two together, mentioned above, were removed. One large piece, not being entirely detached, was raised and left. The surface thus left unprotected by bone was at least two and a half inches in diameter. Of course no trephining was necessary. The sharp points of bone being removed with the pliers, the periosteum and dura mater having been replaced as well as possible, I closed the incisions with sutures except enough immediately over the ear for the purpose of drainage. The wound was then dressed with cold water. No ligatures for the arteries of the scalp were necessary. The boy was then left, and his father ordered to give him 20 grs. of potass. bromid. every two hours if he should become restless or complain of headache. He did well for ten days, having suffered slightly with symptoms of cerebral irritation, which were easily controlled by the potass. bromid. There was very little purulent discharge, and this came through the upper part of the wound where the sutures were, the lower part, without sutures, having healed by first intention in two days. There was up to this time every indication of a favourable result.

May 1st, I for the first time noticed indications of fungus of the brain. The sutures had been pulled loose and the incisions made to gape by an ugly pulsating tumour forcing its way through the wounded scalp. (The incision into the scalp indirectly caused the fungus—for if the incision had not been made the boy would have died before the fungus could have formed!) When I attempted to use compresses they gave such pain that I had to abandon them. The wound was syringed out with a carbolized solution, and in two or three days (during which time there were symptoms of decided cerebral irritation) the compresses were again applied, and this time could be borne. The fungous tumour, the size of a pullet's egg, decreased, the wound in the scalp rapidly cicatrized, and the boy is now entirely well. During the latter part of June, contrary to my advice, he passed a very creditable final examination in his school. His mind is as clear as ever.

This case is a remarkable instance of decided depression of bone and extravasation of blood without a single symptom of compression. It also illustrates to what a fearful extent bone may be broken, dura mater lacerated,

rated, and brain literally crushed, without the scalp being in the least wounded. I will state here that I could easily feel the petrous portion of the temporal bone when I was exploring the wound for loose fragments from the fracture.

Does any one pretend to say that I did wrong in operating so soon on this boy? Should I have waited until symptoms of compression came on before making the exploratory incision—for such it was in the beginning? But for the course pursued death would in all probability have resulted. Yet this case was treated contrary to the rules laid down in the text-books. It was a simple fracture, without apparent depression, and with no symptoms of compression.

CASE II.—Lee Frazier, age 13, was struck over the left temple by the butt-end of a base-ball bat on the afternoon of Sept. 16, 1870. He was brought to my office, a distance of two blocks from where he was injured, and I saw him a few minutes after the occurrence. Symptoms of concussion predominated over those of compression, which latter were very slight. There was a cup-shaped depression on the left side of the head just the size of the end of the bat with which he had been struck. As the fracture was simple and the symptoms of compression but slight, it was determined to wait until the demand for operative interference should become more urgent. The next morning, instead of a depression there was a puffy scalp tumour over the seat of fracture, and the boy was comatose. I made a crucial incision large enough when the flaps were reflected to expose the whole fracture. As the bones were fearfully crushed, no trephining was necessary. I began to remove pieces of bone, and continued until I was alarmed at the tremendous gap I was making in the skull. Most of the squamous portion of the temporal, a large piece of the parietal, including the *anterior-inferior angle*, part of the frontal, and part of the great wing of the sphenoid were loose and had to be removed. Pieces which were only partially detached were raised and left. The dura mater was slightly lacerated, much less than would be expected under the circumstances. The brain did not seem to be injured at all. Sutures having been used, the wound was dressed with cold water and a compress applied. The boy became conscious soon after the operation, and made a perfect recovery without a single unfavourable symptom. I attribute the non-formation of fungus to the fact that there was but slight laceration of dura mater.

This boy should have had immediate attention, due regard being had for the shock and concussion which existed at the time. I think now that I took a great risk in allowing him to remain in his condition for fifteen hours, as he might have died during that time. In the *Am. Journ. Med. Sciences* for July, 1876, p. 292, there is the report of a case by Dr. Turner, of Dakota, which illustrates the danger of too long delay. His patient might *possibly* have been saved by proper treatment instituted soon enough; but I must confess that it would require a bold surgeon to have performed the necessary operation in view of the modern and ancient teaching on this subject. The proper treatment was decided on, viz., to make an exploratory incision and be guided by the result; but the works on surgery

being rather timid in advising this course, Dr. Turner waited until death was upon his man. I venture to say that if he has another case resembling this he will make an incision at once, and if necessary trephine, elevate depressed bone, or, if extravasation of blood is supposed to be the cause of the compression, remove it at all hazards. Death is almost certain unless this plan be followed.

I might mention here a singular fact. Dupuytren was one of the strongest advocates of the expectant or let-alone treatment in simple fractures of the skull with depression. Yet, believing that a patient had an abscess of the brain, he trephined, and when even the dura mater was punctured and no pus flowed, he was bold enough to plunge his bistoury into brain substance itself and thus achieve a wonderful cure.

The following cases show the danger of the non-operative treatment:—

CASE III.—In 1869 I was sent for by the attending physician to see J—— E——, aged 8 years, in an adjoining county. The messenger, a negro, said he had been kicked in the head by a horse, but gave no further particulars. When I arrived there were five other physicians in the house. I learned that the boy had been injured *twenty-eight days* before. There was slight "concussion" at the time of the injury, but the doctor had apprehended nothing serious up to the last four or five days, when the boy began evidently to grow worse. On examining him we found a scalp wound about one and a half inch long over the right frontal eminence. This wound had healed by granulations, which then looked pale and flabby. Not one of us could tell by physical examination whether there was a fracture of the bone with depression. The attending doctor said he didn't know, as he had not examined when the wound was open, and he had seen no symptoms indicative of depressed bone. (He had probably consulted some work on conservative surgery, which told him never to interfere unless there were symptoms of compression.) The boy's pulse was over 130, his tongue coated, bowels irritable. He was partly delirious, and had decided photophobia. I expressed the opinion that there was irritation or inflammation of the brain resulting probably from depressed bone or a small abscess, and I proposed to open the wound and make the examination thorough. Only one physician agreed to my opinion; the others said that it would make matters worse by any interference. They finally consented, "as the boy would die anyhow," that I might be allowed to see the nature of the injury. (I was granted permission to make something on the order of an *ante-post-mortem examination* rather than a surgical operation.) I made a crucial incision, and removed two pieces of depressed bone half the size of the bowl of a teaspoon. The brain looked disorganized, and there was a slight sero-purulent discharge through the wound. He died two days after the operation.

I have no doubt that this patient could have been cured if the exact nature of the injury had been fully ascertained when first received, and the offending pieces of bone promptly removed. As I did not operate until the secondary effects of the injury had occurred and he was evidently doomed, it cannot be said that the operation of reopening the wound killed him.

CASE IV.—Hugh C——, aged 5 years. Some time in May, 1876, I was called to see this child, who was having severe muscular spasms, confined to the left side. He had been vomited and purged before I reached him. The warm bath and cold to the head seeming to have no effect, I used chloroform by inhalation, which stopped the spasm. Not being able to trace the convulsion to the usual causes, and observing the unilateral character, I pressed my inquiries, and learned that six weeks before he had been struck over the right frontal eminence by a piece of brick, which made a punctured wound of the scalp down to the bone. The family physician coming in, I advised that the child be given large doses of the bromid. potass., and if the spasms were not controlled by this treatment, I would certainly trephine over the wound. I told him what I supposed to be the cause of the convulsions. He agreed with my views. About two weeks after my first visit I was called again, and found the child in the same condition as when I first saw him. I learned that he had taken the remedies, but that the spasms had occurred more frequently and with greater intensity. I again suggested trephining, and the attending physician tried to persuade the parents to consent. They thought, however, that the remedy was too severe, and their child might "outgrow" his trouble. He died. I believe that there was here a fracture of the internal table of the skull, and that a splendid opportunity to save a life by trephining was lost. *No post-mortem permitted.*

CASE V.—John J——, aged 21, walked into my office as if in perfect health. When asked what brought him, he said, "Oh, nothing much. I've got a knife blade in my head; I want you to take out." A few hours before he had been stabbed through the left side of the frontal bone about a half inch from the coronal suture and an inch to the left of the median line. He said his head pained him some little, but the closest observation revealed no symptom that the man was hurt. The blade was the large one of a "Congress knife." On examination I found it broken off to the shank, and firmly fixed in the skull, only the eighth of an inch remaining above the bone. I made a crucial incision, and dissected the scalp from around the blade. In spite of all my efforts with instruments (shoemaker's pinelers and others), the blade could not be moved. I suggested trephining. My father, thinking this operation too dangerous and unnecessary, suggested that he could chisel enough of the skull away from the blade to enable us to remove it. This he proceeded at once to do; the fellow in the mean time sitting in a chair and taking the whole proceeding very quietly. The man did well for three days, and in six he was *dead*.

What killed him? The blade penetrating the brain? No; the blade had fractured the internal table, and, although the chisel had removed enough to release the knife, it had not taken away a few sharp spicula of bone which were then inflicting a mortal injury on the man's brain. It may be interesting to contrast the last case with the following:—

CASE VI.—Nelson Finney, a coloured man, aged 25 years, having insulted a damsel of his persuasion at a dance, was immediately felled to the floor by a skillet, an old frying skillet, which is so common an article over our "Sunny South." The woman held it by the long handle, and struck Finney with such force as to bury one of the legs at least one and a half inches into his brain. He was struck over the left temple. The blow was received about midnight. Next morning when called to see him

I found him comatose, with a punctured fracture as described. The necessary incisions having been made, it was found impossible to remove or raise the bone without first using the trephine. This instrument was used at once; then there was no trouble in removing thirteen small pieces of bone, some the size of a finger-nail. The dura mater and brain were lacerated of course, some of the latter escaping. Notwithstanding these injuries, the man recovered without an alarming symptom.

I do not cite these last cases to prove my point with respect to the treatment of simple fracture with depression, but I go further and state, that frequently a life is sacrificed through the timidity of the physician even when operative interference is unquestionably sanctioned by the textbooks. It is too often the case that the operation of trephining and the raising of depressed bone is deferred until the patient is moribund, or, as more frequently happens, is left to the expectant treatment because there are no immediate or urgent symptoms. As Chelius remarks, secondary effects come sooner or later, and it is then too late for any operation to be of service. I do not believe that one in ten will recover fully in mind and body when these secondary symptoms have supervened, no matter what treatment may be adopted. In nineteen cases of fractured skull (*Surg. Hist. of the War of the Rebellion*), when there were secondary complications, ten died, eight ended in permanent disability, and one fully recovered.

There is described in most surgical works a peculiar condition of the scalp, which, to a novice, seems a depression of bone in the centre of the scalp tumour. This depression is supposed to be caused by the driving forcibly together of the tissues of the scalp. Blood is extravasated around this point, and gives the scalp a puffy appearance, but, being unable to force itself between the tissues in the centre, these remain comparatively depressed. Whenever this condition exists, and the physician is in doubt as to its exact nature, an incision should be made down to the bone. If this be found fractured, treat as a compound fracture; if no fracture is present, no harm is done. The incision merely enables the scalp to get rid of the effused blood, and the sooner to regain its normal condition.

No rules of treatment can be laid down from the observation of a limited number of cases such as I have reported. I have given only a part of those which have come under my observation, having selected those which seem to me illustrative of the opinions I have advanced.

However, as experience is said to be a safe guide, let us analyze 105 cases of fractured skull reported on pages 67, 68, and 69 of *Surg. Hist. of the War of the Rebellion*, 1st Part. These fractures resembled those seen in private practice, and resulted from falls, railway accidents, blows with bludgeons and the butts of muskets, etc. 79 were treated without operative interference; 43 died, 54.4 per cent. 26 were operated on; 14 died, 60.8 per cent. This comparative mortality looks at first glance as if the views of Cooper, Abernethy, and other advocates of the non-operative plan, were cor-

rect, but a careful analysis will show the reverse of this. Of the 79 who were not operated on, 28 had fracture without injury to the brain or its membranes, and all of these latter are reported as having recovered except one, who died from laceration of the testes. These men of course required no operative treatment. There were therefore 51 who had injury to the brain or its membranes from fracture of the skull who received no operative treatment, and 43 died, a per cent. of 84.3. Of the 26 who received operative treatment 14 died, 60.8 per cent. With the fact that those operated on were probably much more seriously injured than those not, the difference in favour of the operative treatment becomes the more evident. To sum up, out of 51 men with injury to the brain and its membranes treated expectantly, 43 die, 8 recover, whether fully or not is not stated. Out of 26 men who received operative treatment (and who were probably much more seriously injured) 14 die, 9 certainly recover, and 3 probably recover. Non-operative treatment 84.3 per cent. die; operative 60.8. These facts speak out unmistakably. Of 58 cases in which compression of the brain supervened immediately or soon after the injury 46 died, 3 unknown, 3 completely recovered, 6 partially recovered. As only 14 of those operated on died, it follows that 32 men who had compression of the brain died without operative interference.

I repeat that persons, even adults, may recover from depressed bone without an operation to relieve them, but the instances on record are so rare, and they are such remarkable exceptions to the general rule, that they by no means warrant us in waiting for urgent symptoms before exploring by incision or even operating.

I cannot understand why a simple fracture should not be treated as a compound one. When there is the slightest doubt as to the nature and extent of the injury, let us imitate the example of the law, "give our patient the benefit of the doubt," by incising at once; after this has been done, treat the fracture (if there be one) as a compound fracture is treated by almost all surgeons. I suggest, however, that no *more* be done after incision in simple fracture than is recommended for a fracture compound from the beginning.

I did not, neither do I now, intend to discuss the subject of trephining, but I cannot refrain from expressing the opinion that the rules for trephining laid down by Chelius (*Syst. Surgery by South*, vol. i. pp. 456 and 457, ed. 1847) are correct and safe. The following sentence is very expressive: "Trepanning is not to be considered in itself a dangerous operation, it is so esteemed because most commonly it is employed when the diseased changes have already become great, or severe injury has been produced by external violence."

ART. IV.—*The Disproportion between the Power of Hearing the Tick of a Watch and the Human Voice; with remarks on hearing better in the midst of noise.*¹ By D. B. ST. JOHN ROOSA, M.D., Professor of Ophthalmology and Otology in the University of the City of New York, Surgeon to the Manhattan Eye and Ear Hospital.

It has long been known that the power of hearing the tick of a watch is not always in exact proportion to the capability of hearing the human voice. Some few persons, for example, hear the tick of a watch at what is fairly considered a normal distance, while they hear conversation very badly; while, on the other hand, what proves to be a much larger class hear and distinguish the notes of the human voice much better than they count the tick of a watch. With a view to determine, with some approach to exactness, the degree of this disproportion, which so many of us have found to exist, I have lately instituted an examination of the cases of loss of hearing in both ears that have presented themselves to me, and have arranged the results in a table, which I desire to present to the Society, with a few remarks upon the general subject thus presented. I am aware of the comparatively slight importance of the subject, but I hope the few facts shown may, at least, turn the attention of some observers, so that a careful working up of the questions involved may finally accomplish something for otological science. It is hardly necessary to say that I have made no examination when one ear alone is affected, because our means of excluding one ear, while the other is tested, are so imperfect as not to be relied upon. Cases where the watch is not heard at all have also been excluded, for in a number of such cases there may be a great difference in auditory power, while the watch test merely shows that they are alike in not being able to hear its tick. The watch used in this test should be heard by an average ear, in a moderately quiet place, forty inches. Normal hearing would, therefore, be expressed by the fraction $\frac{40}{40}$.

¹ Read before the New York Society of Neurology.

Table showing the Disproportion between the Power of Hearing the Tick of a Watch and the Human Voice.

No.	Sex and age.	Disease.	Hearing distance for the watch.	Hearing distance for conversation, the patient being with the back to the speaker.
1	Female 17	Acute suppuration of right middle ear; chronic suppuration of left. After treatment.	R. $\frac{\text{laid}}{40}$ L. $\frac{0}{40}$	Words spoken loudly at 10 feet with difficulty.
2	Male 45	Disease of labyrinth.	R. $\frac{4}{40}$ L. $\frac{0}{40}$ R. $\frac{0}{40}$ L. $\frac{8}{40}$	Loud conversation at 20 feet. Voice at 30 feet; cannot tell the direction from which sound comes.
3	Female 28	Chronic catarrh middle ear.	R. $\frac{7}{40}$ L. $\frac{4}{40}$	Conversation at 20 ft.
4	Male 56	Chronic proliferous inflammation of both middle ears.	R. Laid. L. Laid.	Conversation at 20 ft.
5	Male 62	Chronic catarrh middle ear.	R. pressed. L. pressed.	Loud conversation at 20 feet.
6	Female 23	Chronic catarrh both middle ears; chronic suppurative myringitis left.	R. $\frac{5}{40}$ L. $\frac{3}{40}$	Loud conversation at 6 feet.
7	Male 9½	Chronic catarrh middle ears.	R. $\frac{1}{40}$ L. $\frac{3}{40}$	Loud conversation at 30 feet.
8	Male 16	Chronic catarrh middle ears.	R. $\frac{\text{laid}}{40}$ L. $\frac{\text{laid}}{40}$	Conversation at 20 ft.
9 ¹	Male 18	Chronic catarrh middle ears.	R. $\frac{40}{40}$ L. $\frac{30}{40}$ R. $\frac{40}{40}$ L. $\frac{40}{40}$	Conversation at 12 ft. Conversation at 30 feet.
10	Female 15	Chronic catarrh middle ears.	R. $\frac{4}{40}$ L. $\frac{8}{40}$	Conversation at 20 ft.
11	Male 19	Chronic suppuration middle ears.	R. $\frac{5}{40}$ L. $\frac{10}{40}$	Conversation at 20 ft.
12	Female 29	Chronic catarrh middle ears.	R. $\frac{\text{laid}}{40}$ L. $\frac{\text{laid}}{40}$	Conversation at 20 ft.
13	Male 40	Acute suppuration right middle ear; chronic on left.	H. D. R. $\frac{1}{40}$ L. $\frac{\text{laid}}{40}$	Ordinary conversation with great ease at 30 feet.
14	Female 25	Chronic catarrh middle ears.	R. $\frac{12}{40}$ L. $\frac{6}{40}$	Ordinary conversation with difficulty at 20 feet.
15	Male 32	Chronic catarrh middle ears.	R. $\frac{0}{40}$ L. $\frac{14}{40}$	Conversation at 16 ft.
16	Male 15	Chronic suppuration right middle ear; chronic proliferous inflammation of left middle ear.	R. $\frac{6}{40}$ L. mastoid.	Conversation at 20 ft.

¹ In corroboration of the Case No. 9, I append the results of an examination by my friend, Dr. P. W. Cremin, under whose care the patient afterwards came.

H. D. watch.

Voice.

$\frac{72}{72}$

4 feet.

After treatment for about three weeks, for the watch the hearing was the same, and for the voice six feet.

Roosa, On the Power of Hearing.

[Jan.

No.	Sex and age.	Disease	Hearing distance for the watch.		Hearing distance for conversation, the patient being with the back to the speaker.
			R. $\frac{8}{40}$	L. $\frac{0}{40}$ pressed	
17	Male 41	Chronic catarrh middle ears.	R. $\frac{4}{40}$	L. $\frac{40}{40}$ pressed	Conversation with ease at 40 feet.
18	Male 45	Chronic catarrh middle ears.	R. $\frac{4}{40}$	L. $\frac{40}{40}$ pressed	Conversation at 40 ft.
19	Male 54	Chronic catarrh middle ears, with inspissated cerumen left side.	R. $\frac{4}{40}$	L. $\frac{40}{40}$	Loud conversation at 45 feet.
20	Male 70	Chronic catarrh middle ears.	R. $\frac{3}{40}$ pressed	L. $\frac{4}{40}$ laid	Conversation at 30 ft.
21	Female 16	Chronic catarrh middle ears.	R. $\frac{2}{40}$	L. $\frac{4}{40}$ laid	Voice with difficulty at 10 feet.
22	Male 50	Chronic catarrh middle ears.	R. $\frac{0}{40}$	L. $\frac{6}{40}$	Conversation at 40 ft.
23	Male 32	Chronic proliferous inflammation middle ears, with impacted wax left side.	R. $\frac{0}{40}$	L. $\frac{6}{40}$	Conversation at 30 ft.
24	Male 36	Chronic suppuration middle ears.	R. $\frac{0}{40}$ contact	L. $\frac{0}{40}$ on mustoid	Ordinary conversation at 18 feet.
25	Female 24	Chronic catarrh middle ears.	R. $\frac{3}{40}$ laid	L. $\frac{4}{40}$	Conversation at 10 ft.
26	Male 74	Chronic catarrh middle ears; excessive nasal catarrh.	R. $\frac{3}{40}$ laid	L. $\frac{4}{40}$	Conversation at 40 ft.
27	Female 15	Subacute catarrh middle ears, and of post-pharyngeal space.	R. $\frac{2}{40}$	L. $\frac{4}{40}$	Ordinary conversation at 30 feet.
28	Male 71	Chronic catarrh middle ears, with secondary changes in cochlea.	R. $\frac{1\frac{1}{2}}{40}$	L. $\frac{40}{40}$ pressed	Conversation at 20 ft.
29	Male 44	Chronic catarrh middle ears.	R. $\frac{1\frac{1}{2}}{40}$	L. $\frac{1\frac{1}{2}}{40}$	Conversation at 30 ft.
30	Female 22	Subacute catarrh middle ears, with impacted cerumen.	R. $\frac{1\frac{1}{2}}{40}$	L. $\frac{3}{40}$	Conversation at 26 ft.
31	Male 38	Chronic catarrh both ears.	R. $\frac{12}{40}$	L. $\frac{30}{40}$	Conversation at 35 feet.
32	Male 13	Chronic suppuration middle ears.	R. $\frac{12}{40}$	L. $\frac{30}{40}$	Conversation at 20 ft.
33	Male 21	Chronic catarrh both middle ears, with secondary disease of nerve.	R. $\frac{1}{40}$	L. $\frac{7}{40}$ pressed	Conversation at 30 ft.
34	Male 33	Affection of cochlea from exposure to long-continued and violent cannonading.	R. $\frac{1}{40}$ laid	L. $\frac{1}{40}$	Loud conversation at 8 feet.
					Conversation at 50 ft., general conversation with ease. Does not hear high notes well.

No.	Sex and age.	Disease.	Hearing distance for the watch.	Hearing distance for conversation, the patient being with the back to the speaker.
35	Female 17	Chronic proliferous inflammation middle ears.	R. $\frac{3}{30}$ L. $\frac{5}{40}$	Conversation with some difficulty at 30 feet.
36	..... 34	Chronic proliferous inflammation middle ears, with secondary affection of labyrinth.	R. $\frac{\text{pressed}}{40}$ L. $\frac{\text{laid}}{40}$	Loud conversation at 6 ft.
37	..... 37	Chronic proliferous inflammation middle ears.	R. $\frac{1}{40}$ L. $\frac{\text{laid}}{40}$	Distinct voice at 2 ft.
38	..... 36	Chronic catarrh middle ears, with nearly entire loss of both membranæ tympanorum.	R. $\frac{\text{laid}}{40}$ L. $\frac{\text{laid}}{40}$ After use of artificial membranes R. $\frac{3}{40}$ L. $\frac{\text{laid}}{40}$	Voice at 34, after use of artificial membrana tympanorum.

The tests with the voice were made in a furnished room, fifty feet long, the face of the person addressed being turned away from the speaker.

It is certainly important to secure a good test or standard of a function. Without this there can be no exact idea as to the amount of disease in a given organ. For the eye, as is well known, this has been achieved, and the benefit in the exactness with which a loss of function is estimated in ophthalmic practice is everywhere appreciated. For the ear we have as yet no accurate tests which are adapted for the records of the consulting room. In ordinary life, however, we have no difficulty in determining who of our associates do not hear well, and in our social companionships we immediately form an opinion as to whether our friends are or are not hard of hearing, and just about how much their hearing is impaired. But when it comes to the matter of making a scientific record, we are usually reduced to the statement that a patient hears the watch that is normally heard at a given distance so much less, and sometimes it is added that a voice, about whose quality we know nothing, is heard in a loud tone, at a certain number of feet, in a whisper at such a distance, and so on. Could anything be more inexact? Of the two tests, perhaps, on the whole, we should, at first view, prefer the tick of a watch. But when we find that this in many cases is no index whatever of the power to join in general conversation, or to hear the words of a public speaker, in fact, that it tells very little of the patient's auditory power under the very circumstances for which we are most concerned about him, we are at a loss as to what tests to apply. It was, indeed, a great gain to exact methods of examination when the power of hearing the watch was indicated by a fraction, the denominator of which expressed the distance at which its tick could be heard by persons with normal hearing power, while the numerator

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19	Male 54	Chronic catarrh middle ears, with inspissated cerumen left side.	R. $\frac{4}{40}$ L. $\frac{\text{pressed}}{40}$	Loud conversation at 45 feet.
20	Male 70	Chronic catarrh middle ears.	R. $\frac{\text{pressed}}{40}$ L. $\frac{\text{loud}}{40}$	Conversation at 30 ft.
21	Female 16	Chronic catarrh middle ears.	R. $\frac{3}{40}$ L. $\frac{4}{40}$	Voice with difficulty at 10 feet.
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29	Male 44	Chronic catarrh middle ears.	R. $\frac{14}{40}$ L. $\frac{14}{40}$	Conversation at 30 ft.
30	Female 22	Subacute catarrh middle ears, with impacted cerumen.	R. $\frac{14}{40}$ L. $\frac{3}{40}$ After removal of cerumen and inflation	Conversation at 26 ft.
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expressed the actual distance at which it was perceived (Prout); for, in the improvement of a case, the increased capacity to hear the watch often, but not always, goes *pari passu* with the power of hearing conversation. The watch, however, is no such test for auditory power as is a series of test types for that of vision. In the latter case, the ability to measure the smallest visual angle capable of allowing an image to be formed upon the retina, gave Snellen the opportunity to make test types that determine visual capability with an accuracy that very well expresses the actual power of the patient for the very things for which he needs eyes. Consequently, from our examination in the consulting room, we may determine with exactness about how much the patient will be embarrassed by his loss of function in the intercourse of daily life. The watch forms no such test; and after applying it we know very little as to how well a patient can hear the human voice.

From an exclusive use of it, many of us have grown into a combination of methods, so that we now record, not only how far a watch is heard, but also how far the voice. A comparison of the vast difference in the tones excited by the mechanism of a watch and that of the larynx, will at once strengthen the general conviction that the former forms no adequate or exact test of practical hearing power. The sound of a watch, that we call its tick, is produced by the striking of a little hammer upon the apex or side of the tooth of a ratchet wheel, and it is, therefore, a simple unvarying tone, modified as to quality by the mechanism, while the sounds produced by the vocal chords, and reinforced by the resonating cavities of the nose and mouth, may pass through a range of musical notes, which, as in the case of the celebrated Purepa Rosa, compassed three full octaves.¹ A mere regular sound, such as that of the watch, is certainly in no sense to be compared with the music of the human voice. If, however, the power of hearing the watch tick were even proportional to the power of hearing conversation, it would be an approximately exact test. If we could say that a person who hears a watch that ought to be heard at forty inches, say thirty inches, or who has a hearing power of $\frac{30}{40}$, has an amount of hearing as adequate to the work of life as $\frac{20}{30}$, Snellen, is for vision, the statement would give us a definite idea of just how much the hearing is impaired. But the table I have read shows that the power of hearing the tick of a watch stands in no exact or determinable proportion to the power of hearing conversation. Moreover, I believe a comparative examination will show that the test of the voice of one person addressed particularly to another who is waiting to hear it in a quiet room, no matter what kind of a tone is employed, will also be found, on any comparison

¹ Flint's Physiology, Secretion, Excretion, etc., p. 503.

with what is demanded of an ear, utterly inadequate to give an idea of the true amount of auditory power. A healthy ear, as is well known, can appreciate,—and probably the daily demands of life in the varied noises we live among, requires such an appreciation—from seven to eleven octaves. It is impossible then for the different tones of an instrument capable at its best of reaching but three octaves to form a sufficient test. Perhaps an auditory test will yet be found in a musical instrument, and music boxes and sounds are sometimes employed by aurists. But up to this time we seem to be limited to the ungracious task of criticizing old methods without suggesting a better one. A case that illustrates the inadequacy of the voice, employed in the manner I have indicated, as a test for hearing power, is the following:—

A gentleman consulted me a few days since, who could hear the watch only when laid on the right ear and one-fourth inch from the left. He could hear conversation in an ordinary tone with his face away from the speaker, fifty feet. This kind of discrepancy my previous examinations prepared me for; but I was not quite prepared for the fact that with this capability for hearing a voice addressed to him, and for which he was waiting, he did not hear readily the conversation of a gentleman with a good clear voice standing within three feet of him, and whose face was turned towards him. The patient complained that he could not hear common conversation, and that even when sitting in an orchestra chair of a theatre he could with difficulty follow a play. My tone in talking to the patient was what I should call a little above an ordinary one for conversation; and by all ordinary comparison, a man who could hear such a voice fifty feet, ought to be able to hear conversation near at hand with ease. This patient was incapable of distinguishing well the conversational tone, no matter how near he was to the speaker, while one pitched above that he heard at a fair distance.

One practical deduction from these tables has occurred to me, and that is that those cases are least amenable to treatment in which the watch is heard relatively better than the voice. This deduction, however, is one that I cannot demonstrate to be correct. I do not know whether the power of hearing the watch and conversation goes on improving in a consonant manner as recovery takes place from acute disease, but my impression from the observation of a large number of cases is, that it usually does, and that we do not find this disproportion in any striking degree, except in cases that have become chronic from acute suppuration, and in the insidious forms of disease of the ear that are never acute, and which are known as chronic catarrhal, and proliferous inflammations of the middle ear. Cases of chronic suppuration exhibit the disproportion, but patients suffering from these affections usually hear the voice relatively better than the watch, a very happy circumstance for them. Indeed, were it not for the dangers incident to loss of the drumhead, chronic suppuration would be much to be preferred to chronic catarrh or proliferation. I think we may explain the apparent fact that there is not such a dispro-

portion between the power of hearing the tick of a watch and the voice in acute cases, by the fact that there is in these cases a more uniform and general pressure exerted upon all parts of the cochlea and the rods of Corti, or the terminal auditory apparatus, than in the chronic cases, where we have reason to believe, from our scanty pathological investigations, localized or isolated changes may occur, and thus, of course, an unequal amount of pressure be exerted by sonorous waves.

The disproportion between the power of hearing the watch and the voice becomes very marked in those interesting cases of hearing better in the midst of noise, that were described by Thomas Willis in the seventeenth century. Although the power of hearing the voice is much improved in many partially deaf people, while in a rail car or a stage coach for example, or when a drum is beaten near them, as in Willis's case, the power of hearing the watch, or of hearing the outside or general noise, that of the wheels or the engine, is not improved. This fact has not been always appreciated in the study of this subject. The phenomenon of hearing better in the midst of noise also occurs in subacute cases of catarrh, from which complete recovery occurs. This fact has also, I think, not always been recognized in the theories that have been propounded for the explanation of this phenomenon. Relaxation of the drum membranes, rigidity of the base of the stapes, which is the pathological theory at the base of many of these explanations, will hardly be supposed to occur very markedly in subacute cases of catarrh of the middle ear. The following case illustrates this subject, and, perhaps, may in some degree lead to the elucidation of the problem that has employed several minds.

A man of thirty-six years of age presented himself at my office, saying that he had suffered impairment of hearing as a child from an ulcerative process in both ears. Being a paper manufacturer, he was much accustomed to have bits of paper in his hand, and occasionally he would use them to quiet unpleasant or tickling sensations in the auditory canal. He thus learned that if he put the paper in far enough, and struck the right point, he could hear better. Discovering this, he continued to employ this method for years, and he came to me to know if some better artificial drumhead could not be devised, and also "to instruct the *faculty*." I found both drumheads gone, scarcely a rim remaining; the mucous membrane of the tympanic cavity was swelled and hypersecretive. The ossicles could not be seen. The artificial drumheads of Toynbee improved his hearing from $\frac{\text{laid}}{40}$ to $\frac{9}{40}$, and from thirty-four to fifty feet, and more. The

interesting fact he stated to me is, that when he improved his hearing for the voice, it was only of use in moderately quiet places; that is to say, if he went into a rail car, he needed no help, he could hear the conversation as well, if not better, than those who had healthy ears; but he could not hear the wheels, the engine: in short, the waves of sound from a distance, or the undulations not produced by the human voice did not seem to reach his nerve. When he used his artificial drumhead, like ordinary people, he had some difficulty to hear, on account of the surrounding noise.

Dr. A. H. Buek,¹ in a review on the progress of otology, has suggested a new explanation for this phenomenon of hearing better in the midst of noise, which he does not claim as his own, but which I am unable to find in any other place. He assumes the pathological condition in these cases to be one of rigidity, either of the ligament which holds the base of the stapes bone, or of the *membrana tympani secundaria*. He then supposes that wave sounds of sufficient strength are put in motion by the noises of these noisy places to set the stapes in motion, while it could not be set in motion by the waves produced in ordinary conversation. Once in vibration this ossicle, which is termed the key to the auditory chamber, can perform, with a certain degree of freedom, the subordinate vibrations called into existence by the conversation which is carried on near by.

The facts in the phenomenon of hearing better in the midst of noise are: A certain number of people whose hearing is impaired hear better in a noise than they do in a quiet place, and not only that, but *they hear better than people whose hearing power is normal*. As to the pathology of these cases, we know that this condition obtains in acute, subacute, and chronic affections, suppurative and non-suppurative, of the middle ear, but not in all the cases of these affections, and that it does not occur in diseases of the nerve. The improvement in hearing power in noise seems only to extend to the human voice. The tick of a watch is not heard better or further in a noisy place than in a quiet one, as I have taken pains to ascertain. Indeed, it is not heard as well. Dr. Buek's explanation does not seem to me adequate to explain all these facts. In the first place, we can hardly suppose "rigidity of the ligament that holds the base of the stapes bone, etc.," to be the pathological condition in acute or subacute catarrh. In these cases, as I have said, as well as in the chronic forms of disease where rigidity may be supposed, the phenomenon of hearing better in noise occurs. Secondly, the improvement resulting from "setting the stapes in motion" ought to affect other sounds than those of the voice, which it does not.

It will be observed that the patient whose case I have reported, states that he could not hear the outside sounds as well as people with good ears. He proved this by the fact that when he put in his artificial drumheads, and became like other people, he was so much disturbed by the sound of the wheels, engine, etc., that he could not hear conversation as well as when they were out and he was comparatively deaf. In his case at least a kind of Daltonism of the ear, an insensibility to certain sounds, was produced. Perhaps, then, the elevation of the pitch of the voice, or what is the same thing, the increase in the number of vibrations in a given time, with a change in quality of the voice of the speaker, taken together with the insensibility to outside sounds, enabled this patient to hear better in a

¹ New York Medical Record, July 5, 1875.

noise. If we can successfully imitate this increase in pitch and this assumed change in quality, in a quiet place, of course such patients should hear us well there also. This experiment is necessarily a difficult, but probably not an impossible one. I hope other cases, and the carrying out of the experiment suggested, will finally enable us to explain what is now only a puzzle to most of those who investigate aural disease.

ART. V.—*On the Development of the External Ear Passages.*

By DAVID HUNT, M.D., of Boston, Mass.

THE history of embryology contained but little of interest, as far as the development of the ear was concerned, until von Baer published his classical observations in 1828. In the seventeenth century a number of the most excellent observers busied themselves with the anatomy of the ear, and at the same time were more or less engaged in those studies of development which have made the century an epoch in the history of embryological research; still we miss anything like an earnest attempt to account for the origin of the intricate parts contained in the organ of hearing.

Early in the present century von Baer and Huschke may be said to have placed the study of the development of the ear upon a solid basis. The plan of their work is still good, and as far as the meatus and Eustachian tube is concerned, the details have scarcely been added to.

It so happened that the formation of the ear became a subject of controversy between von Baer and Huschke; the former, misled by the seeming analogy between the otic and optic vesicles, described the ear as an offshoot from the brain.¹

Huschke attacked this view,² and proved that the otic vesicle is an involution of the tegumentary layer of the embryo. At the same time von Baer stated an opinion as to the development of the meatus and Eustachian tube³ that was opposed by Huschke; here also the latter has been declared the victor, but I believe incorrectly.

Huschke's⁴ views now prevail, and have been supported by Valentin,⁵ Rathke,⁶ and Bischoff.⁷

¹ Ueber Entwicklungsgeschichte der Thiere Königsbnrg, 1828; Erster Theil, p. 30.

² Isis von Oken, 1831, heft. 8-10, seite 951.

³ Op. citat., Part I. pp. 77, 106, 122, 131, and Part II. p. 116.

⁴ Op. citat., vol. xx. p. 401, 1827; p. 162, 1828; p. 951, 1831. Merkel's Archiv für Anatomie und Physiologie, 1832, p. 40.

⁵ Lehrbuch der Physiologie des Menschen, Braunschweig, 1847.

⁶ Anat. Physiol. Untersuchungen über den Kiemenapparat, 1832, p. 119 and 120.

⁷ Entwicklungsgeschichte des Hunde Eies. Braunschweig, 1845, p. 109.

As evidence of the confusion which exists on the subject, it may be stated that Kölliker, in the new edition of his *Entwicklungsgeschichte des Menschen und der höheren Thiere* (Leipzig, 1876), describes the first cleft as closed in an embryo of ten days (p. 300) and open in another at the same age (p. 253), and Mr. W. K. Parker¹ describes the cavity of the auditory vesicle as the first branchial cleft.

One cause of the confusion which has heretofore existed in the descriptions of the mode of closure of the first branchial cleft, has been that the stages of development of the embryos under examination have been too far apart; another frequent cause has been the advanced stage of development of the embryos. I have selected a series of ten embryos, representing as many stages of development, the smallest measured three-eighths of an inch in length, the largest seven-eighths of an inch.²

In an embryo three-eighths of an inch long the ends of the first and second branchial arches have united in the median line, and a bridge of tissue joins the first and second pair at this place of union; the first fissure is now surrounded with tissue, and is much longer than the second, the difference being greater in embryos one-eighth of an inch longer; the cause of this apparent increase in length is the budding of the superior maxillary process of the first arch, this process is accompanied by a swelling or puffing up of the root of the arch, the boundary between the plateau thus formed, and the neighbouring tissue forms a furrow that appears to be a continuation of the first branchial cleft.³

This continuation of the cleft has a direction nearly at a right angle with the course of the original fissure, that is, it bounds the end of the first arch while the cleft bounds its lower margin; it gives the embryonic mandible the shape of the adult lower jaw, the original fissure bounding the inferior border of the body, and the continuation that we have just described the posterior border of the ramus; this appearance is very striking in an embryo four-eighths of an inch long.

In one sense this furrow is a part of the first branchial fissure, that is, it borders the first branchial arch. I do not propose to discuss the question, but wish particularly to call attention to it as a secondary formation.

¹ On the Structure and Development of the Skull of the Pig. Philosophical Transactions, vol. 164, part 1, 1876.

² The embryos were all from the pig; the descriptions apply to specimens hardened in Müller's fluid and alcohol. The measurements were made from the tip of the snout to the tuberosity of the ischium. I would express my thanks to Messrs. John P. Squire & Co., of Boston, for the liberality with which the resources of their large establishment have been placed at my disposal.

³ It seems to me that Kölliker has cut this furrow in the section which we have referred to (figure 220, page 300 of his *Entwicklungsgeschichte*); this accounts for the depression in the ectoderm, and at the same time explains the contradiction there noticed.

In an embryo four-eighths of an inch long the second branchial arch has undergone a marked change in its shape, it appears shorter; instead of its previous form, like that of a tapering finger, it is more pyramidal, the base being quite broad; on the margin of the arch bordering the first cleft there is a little projection into the fissure; on close examination a little circular nodule is seen situated at just this point, the contour of the nodule is not very sharp, it is more easily distinguished with the aid of Brücke's glasses; this projection on the second arch is to be intimately connected with a slight process from the inferior maxillary process of the first arch, or mandible, which is the point that we have compared to the angle of the lower jaw in the adult.

In an embryo five-eighths of an inch long the cleft is wholly closed on the ventral surface of the embryo; the remainder of the cleft is a shallow depression, the posterior wall of which is thicker and more elevated than the anterior. From the former wall there is a small, pointed projection into the shallow fossa; it is the representative of the circular nodule above referred to. A little ridge is also seen making into the depression from the opposite (anterior) wall almost opposite the point of origin of the projection just described; this is the transformed projection from the inferior maxillary process of the first arch, the same that was compared to the angle of the jaw. The ridge bounding this depression sweeps in a curved line, convexity upwards, from the projection first described across the site of the former cleft to the second projection. The depression or fossa runs out superiorly into a little slit, which is the remains of the furrow that apparently formed a continuation of the first cleft. The slit is as shallow as the depression; they are both lined by the common integument. The most careful inspection fails to discover any communication with sub-tegumentary tissue.

In an embryo eleven-sixteenths of an inch long, a little hole about the size that would have resulted from the prick of a pin has formed in the antero-inferior portion of the fossa; the projection that has formed from the nodule on the second cleft has increased in size, and is distinctly pointed, but the puffy, thick ridge forms but a blunt point; the slit has become shorter and broader, so that now it resembles the remainder of the depression.

In an embryo three-fourths of an inch long the fossa is nearly round, and its superior and inferior wall make nearly symmetrical curves in passing over to the borders of the pointed projection, spoken of in the description of the embryo eleven-sixteenths of an inch long; this projection has become thinner, and its apex has commenced a curve which points forward; the meatus is more easily distinguished.

In an embryo seven-eighths of an inch long no mistake is possible; the "pointed projection" is the antricle which points forward over the shallow concha (depression or fossa) in the antero-inferior angle, of which the

meatus is seen burrowing into tissue, that at a previous period composed the root of the first branchial arch.

It will be seen that we regard the concha as the only opening remaining from the closure of the first branchial cleft, and this opening is entirely superficial; the ridge forming the auricle is the same evidently as that which Valentin¹ describes as forming the external meatus. It has suggested itself to me that the slit described as extending upward from the depression which forms the concha might explain the little pointed projection on the helix described by Darwin; if it does, this projection has its origin in a defective obliteration of the slit, and it is not a rudiment of the apex of the originally pointed auricle of the lower animals.

The early development of the Eustachian tube can be studied on sections made in a plane anterior to the otic vesicle, and nearly parallel with the general direction of the branchial fissure. The section should incline anteriorly, as it passes downward so as to cut the first arch at an oblique angle. In such a section the commencement of the Eustachian tube is seen as a slight depression in the roof of the pharynx. In an embryo nine-sixteenths of an inch long, a section in the same plane will show that this involution has become deeper, that it points outward and upward, and that it lies in the tissue in which the base of the skull is developed. In an embryo eleven-sixteenths of an inch long the relations are plainer, since the connective tissue surrounding the auditory sac has been transformed into cartilage. At this stage of development, the Eustachian tube is easily distinguished; its course is nearly parallel to that of the cochlea, which as yet is not spiral. A nearly vertical section just anterior to the otic vesicle will pass through meatus and tube so as to show the end of the Eustachian tube overlapping the inner end of the meatus; this relation is still plainer in an embryo a little larger where the involution forming the meatus is deeper. In an embryo seven-eighths of an inch long, the drum is easily distinguished as a layer of connective tissue bounded below by the meatus which forms its dermoid surface, above by the Eustachian tube which forms its mucous surface. From this description it will be seen that the membrana propria of the drum is a section of embryonic connective tissue. At this stage of development the long process of the hammer is imbedded in it; this description of its formation also accounts for the position and thickness of the embryonic tympanum.

The hammer and anvil form in the connective tissue above and posterior to the site of the drum; the stapes at first appears to be located in the vestibule rather than in the tympanic cavity; not free in its cavity, however, for it is connected with its wall.²

¹ *Entwicklungsgeschichte des Menschen* (Berlin, 1835), p. 216.

² I do not think that the stapes forms by a process of gemination from the cartilage of the vestibule, as Mr. Parker states; it seems to me to originate independently, in connective tissue, like the other ossicles.

This position of the stapes accounts for the statement generally given by authors, that it forms at a later period than that at which the other ossicles form; it appears later in the tympanic cavity, but I think that its formation begins at about the same time with that of the hammer and anvil. The outer wall of the Eustachian tube lines the drum, and covers in the long process of the hammer; the inner wall shuts the stapes from the tympanic cavity; the body of the hammer and the anvil lie above the end of the tube in the connective tissue from which they are formed; it seems that the formation of the ossicula is directly connected with the formation of the mastoid cells; the growth of the bones is accompanied by an absorption of the connective tissue around them, so that later when ossification takes place in this tissue, there are only bands composed of a few embryonic cells, and their processes remaining, as a result we have the thin, bony plates, that bound the cavities in the mastoid process.

ART. VI.—*Remarks on some of the Rarer Syphilitic Neuroses of the Eye, illustrated by cases.* By CHARLES S. BULL, M D., Ophthalmic Surgeon to Charity Hospital, Assistant Surgeon to the N. Y. Eye Infirmary.

THOUGH syphilitic affections of the nervous system constitute a field which of late years has been assiduously and carefully worked, yet we all must admit that cases are by no means infrequently met with, which, in the obscurity of their symptoms, or the rapidity or slowness of their course, or in the results yielded by treatment, differ so markedly from what was expected, that we hesitate in our generalizations, and are almost prepared to doubt what we have hitherto regarded as established facts. Yet, although such cases necessarily make us careful in diagnosis, it will not do to err on the side of caution, lest we meet with unfortunate therapeutical results. In many neuroses of the eye, we rarely or never meet with any really definite sign which would immediately prove its syphilitic nature. Though the simultaneous occurrence of different symptoms in a given case enables us to make a true diagnosis of syphilitic nerve disease, yet in them all we must depend more or less upon the patient's history for aid. The manner in which symptoms occur, their arrangement in point of time, may sometimes help us materially in coming to a diagnosis, and even to a knowledge of the particular nature of the lesion in an individual case. It is of some importance to know whether a lesion is due to the presence of a gummy tumour connected with the nerve tissue, or to pathological changes in the bloodvessels or surroundings of the brain tissue. The cases which illustrate these remarks all pointed to the existence of

some central cerebral lesion as the seat of the trouble, and therefore all consideration of peripheral nerve lesions will be omitted. Of course, we all know that paralyzes of individual cranial nerves may be caused by disease in the same side of the brain or its membranes, or even of the skull. Optic neuritis, followed by atrophy, or simple white atrophy of the optic nerve, without any preceding inflammatory action in the nerve, may occur from disease on one or both sides of the brain, and may affect one or both eyes, but does not materially help us in locating the lesion without the aid of some other symptoms. Of course, we may meet with neuroses of syphilitic origin, situated in the eye and its appendages, without any accompanying symptoms of brain trouble; but, generally speaking, these make their appearance in the course of the disease, and far oftener precede all localized eye trouble. I believe it is generally admitted that the symptoms of syphilitic brain disease are of two kinds, transient and permanent, but I do not think that the same fact has been noticed in syphilitic neuroses of the eye, especially when they affect the integrity of the muscles. Another fact taught us by experience is, that it is next to impossible to lay down any rules for the order of occurrence of the various nerve lesions. They may occur at any period of the disease, and on more than one occasion I have seen them preceding the cutaneous eruption. Generally speaking, the symptoms at first are but slight, and very often transient, but not uncommonly they are persistent, and tend to increase in severity. I think, also, that it may be said that no period is too late for the occurrence of a syphilitic neurosis, for in one of the accompanying cases, seventeen years elapsed between the occurrence of the primary lesion and the appearance of the nervous symptoms.

The two conditions of nerve disease of syphilitic origin, which are illustrated by the cases to be detailed, and to which I wish to call attention, are optic neuritis and paralysis of one or more of the muscles of the eyeball. Both these conditions are common enough, as the result of syphilitic lesions, but these cases are very peculiar in certain of their characteristics, and therefore worthy of special attention. The protean nature of the syphilitic poison is brought home to every practitioner occasionally with special force, but this very fact should prevent us from stamping the effects of syphilitic lesions with something peculiar and unmistakable in themselves.

In respect of the pathology of syphilitic neuroses our knowledge is still in an unsatisfactory state. We know in the early stages there is an affection, generally inflammatory, always proliferative, of the connective tissue of nerve structure, or of their vessels. Of course, the progress of such an affection involves secondarily the nerve structure proper, but only secondarily. Whether the syphilitic poison primarily produces some change of nerve tissue, which is sufficient to cause nerve symptoms, is still a matter

simply of inference. The primary changes have not yet been recognized by microscopical examination.

Now, among the obscurer neuroses of syphilis we may rank motor defects in the ocular muscles; and under this head I include tremor and muscular weakness, as well as actual paralysis. These phenomena are sometimes fugitive and unsettled in position, and although disappearing, they often relapse again and again, and are less easily overcome as the relapses increase in frequency. A muscular tremor or nystagmus may precede an attack of paralysis of the muscles of the eye, though the premonitory symptom is more often a weakness or lessened power of action. Still, a paralysis of one or more ocular muscles coming on gradually, is a much rarer form of neurosis than where the paralysis supervenes suddenly.

Binoocular or compound paralyses of the ocular muscles of syphilitic origin are of diagnostic importance in affections of the brain. Some forms of binoocular paralysis may be distinguished by rapid development and favourable prognosis, and these may be caused by a local basilar meningitis, or even periostitis, rather than by any direct gummy deposit. We look for a common central focus of origin in these cases of bilateral, symmetrical disturbance of innervation, for a peripheral cause for each paralysis is of very rare occurrence. Of course, in these cases of paralysis of one or more ocular muscles of central origin, we meet also with neuroses of other parts of the body, such as hemiplegia, convulsions, and amblyopia or amaurosis. In the examination of these cases the use of the ophthalmoscope is indispensable, but at the same time we should guard ourselves against assuming that atrophy of the optic disk in a syphilitic patient proves that the atrophy was caused by the syphilitic poison alone, for other constitutional causes frequently come into play.

Though, as before stated, syphilitic neuroses may occur at almost any period, yet the early nervous symptoms are usually slight and comparatively transient; and of these it must be confessed that we know but little of the pathological changes which have taken place. The paralysis most often occurs suddenly, and is usually incomplete, being more often a weakening or partial loss of power, rather than actual paralysis. The central process here is irritative or mildly inflammatory, and yields readily to proper treatment. Occasionally, however, grave neuroses are met with in the early stages of syphilis, such as complete paralysis of several of the cranial nerves, associated with convulsions and hemiplegia, and these often resist all treatment, and become permanent. These may be due to extensive periosteal or meningeal inflammation, with marked exudation of granulation tissue which becomes vascularized, or to actual gummy deposits in and around the sheath and connective tissue framework of nerves. Post-mortem examinations have taught us that these growths are most often found just on or behind the optic chiasm, in the pons and in the

cerebellar peduncles, though they may be met with at almost any point. Where the paralyzing lesion is a meningitis, either of the dura mater or arachnoid, it is the same as any other meningeal inflammation; it is scarcely necessary to say that meningitis in a syphilitic patient has no feature distinguishing it as of syphilitic origin.

In regard to optie nenritis or neuro-retinitis, it is usually taught that syphilis does attack the optie nerve, and this not very uncommonly. Again, optie neuritis in a syphilitic patient follows usually the same course as optie neuritis in other patients, and ends in one of two ways, that is, it is recovered from, or, what is much oftener the case, ends in atrophy, despite all treatment, and this within no very long space of time. But during the last three years I have seen three cases in which optie neuritis occurred in syphilitic patients, in which the vision failed up to a certain point and then remained stationary, but in which the ophthalmoscopic signs of nenritis remained unchanged for nearly two years. These were all well-marked cases, in which the active inflammatory action was present during a long period of time, with neither diminution nor improvement of vision in spite of all treatment, though the other symptoms of syphilitic disease had all yielded to the remedies employed. This is a somewhat startling and very unusual fact, that a nerve of special sense should retain its functions to a certain extent unchanged in spite of an inflammatory process which tends to atrophy. This is a point which I do not recollect to have seen or heard mentioned until Dr. Mathewson, of Brooklyn, spoke of a similar case at the last International Ophthalmological Congress, held in New York in September, 1876.

CASE I. *Neuro-Retinitis of three years' duration.*—Wm. H. B., æt. 38, first seen by me September 7, 1874. Primary lesion eighteen years before, which, according to his account, was followed only after a very long interval by constitutional lesions of skin, mucous membranes, and scalp. About five years after initial lesion, had diplopia, which was cured after six weeks' treatment. Fourteen months before I saw him his vision began to fail, for which he consulted an oculist, who told him he had inflammation of both optie nerves. Was treated for some months, and process apparently stayed, though vision was not improved. About two months before I saw him vision again began to fail. On examination

$V = \frac{20}{LXX}$ oe. utr., pupils very small and sluggish. Field of vision concentrically limited and reduced to very small dimensions, most marked in left eye. Only very slight disturbance in colour-sense; recognizes all colours in field but light green; very well-marked neuro-retinitis; considerable swelling of disk ($H_{\frac{1}{2}}$); œdema of retina; enormous retinal veins. No other sign of constitutional syphilis after careful and extended examination. No cardiac disease, and no signs of renal trouble. Urine normal. Treatment consisted in three leeches to each temple, atropia, mercurial inunction, potass. iodidi grs. xv, *ter die*. On third day leeching repeated, and potass. iod. increased to grs. xx. Leeches repeated three times subsequently, and mercury and potass. iod. pushed for three weeks,

when patient began to have some dyspeptic symptoms, and drugs omitted for one week. Recommenced with potass. iod., and rapidly increased dose to grs. 50 *ter die*. Vision improved somewhat in R. E., so that could read $\frac{20}{1}$ +, but remained unchanged in L. E. This patient was

under constant treatment for nearly seven months, but no further improvement ever appeared. The field of vision remained the same, and the neuritis was unchanged. He has been seen at intervals of two or three months ever since, and was last seen in August of this year. Vision was then $\frac{20}{LXX}$, field the same, and the same ophthalmoscopic picture of marked neuritis. By dilating the pupil, at the extreme equatorial region of the fundus, signs of atrophic choroiditis begin to show themselves. No other signs of any syphilitic trouble, and no head symptoms at any time.

Here was a case of syphilis with a long interval between primary lesion and first appearance of constitutional symptoms; the first syphilitic neurosis, diplopia, after five years, and then perfect freedom from any constitutional trouble for thirteen years. Then optic neuritis in both eyes, with failing vision, lasting for three years, without any change either towards recovery or atrophy, and without any head symptoms whatever. That the optic nerve fibres should have retained even partial integrity in spite of the long-continued neuritis and accompanying pressure, without becoming atrophied, is certainly very remarkable, and leads us to entertain a higher opinion of the capacity to resist disintegration, which the optic nerve must possess. It is perhaps almost equally remarkable that there should have been no tendency to recovery in spite of long-continued treatment, and in view of the improvement and eventual disappearance of all the other symptoms. The course pursued by the disease, and the absence of all symptoms pointing to intracranial lesions, render almost impossible any localization of the original cause. In spite of the occurrence of the diplopia, the optic neuritis may have been of peripheral origin, and located in the intraocular end of the nerve. If the "origo mali" were within the cranium, it may have been a low form of meningitis at the base, around or immediately in the neighbourhood of the optic chiasm, where any irritation or exudation might affect one or both third nerves and one or both sixth nerves as well as the optic nerves, though this seems highly improbable.

CASE II. *Optic Neuritis of nearly two years' duration.*—Jane R., æt. 27, first seen Sept. 14, 1874. Contracted syphilis from her husband six years ago, primary lesion being on labia minora, followed by enlarged inguinal glands; but sore healed under local treatment. No constitutional symptoms till nearly *three* years later, when an eruption appeared on face and left arm and hand, and soon spread over whole body. This lasted for nearly a year, and was followed by well-marked alopecia, which even affected the eyebrows. About *five* months before she applied at the eye infirmary for advice she began to suffer from left hemicrania, which at first was transient and not severe, but gradually became constant and, at

times, very severe. One month later she had left ptosis, vision began to fail in the left eye, and she complained of seeing double. She has had five miscarriages; the first three were girls, and the fourth a boy, all aborting at the sixth month. The fifth miscarriage was a two months' fœtus. The sixth child was a boy, carried to full term, and is now an apparently healthy child of ten months of age. Examination showed some slight ptosis of left upper eyelid, and some slight paresis of left internal rectus muscle, but nothing abnormal demonstrable in the ocular muscles, and patient has no diplopia. Pupil normal, R. E. V. = $\frac{20}{xxx}$,

L. E. V. = $\frac{20}{L}$. No limitation of field. Ophthalmoscope showed well

marked optic neuritis in L. E., with considerable swelling of disk and adjacent retina, and very much engorged and pulsating veins. In R. E. no decided neuritis, but whole fundus injected and hyperæmic. No disturbance in colour sense. In L. E., swelling most marked on nasal side of papilla. Hemisrania very violent, and occasional attacks of vertigo.

Treatment.—Mercurial innunction night and morning (3ij each time), and potass. iodidi, grs. xx *ter die*. After first week innunction was stopped, and potass. iod. given in grs. xl doses three times a day. Towards the end of the third week the hemisrania entirely disappeared, and there were no further attacks of vertigo. The dose was then gradually diminished and mercurial innunction again commenced, but there was no improvement in vision and no change in appearance of fundus. This patient still occasionally presents herself for inspection, and was last seen about three months ago. At that time the optic disk was still in the same condition as it was when first seen nearly two years before, but vision had sunk somewhat and was only $\frac{20}{LXX}$ by good illumination.

Here was an interval of three years between occurrence of primary lesion and appearance of constitutional symptoms. First occurrence of neurosis $5\frac{1}{2}$ years after initial lesion, hemisrania being left-sided and pointing to central lesion. The ptosis and diplopia, and later the optic neuritis pointed to a localized trouble, confined to left side, and was probably a gummy new growth, somewhere in neighbourhood of anterior part of middle fossa, on left side, and in front of optic chiasm, assuming as an anatomical fact that decussation of optic nerve fibres in chiasm is partial and not complete. In this case also the paralytic symptoms and hemisrania rapidly disappeared under use of large doses of potass. iodid., but optic neuritis remained unchanged for nearly two years, and vision also was the same as at first examination.

CASE III. *Neuro-Retinitis, oc. utr.*—James M., æt. 45, first seen Dec. 8, 1875. Initial lesion of syphilis eight years ago, with enlarged inguinal glands, and five weeks subsequently a cutaneous eruption on face, neck, and hands. Recovered from this and had no further symptoms of constitutional trouble for more than seven years. About eight months before he applied for treatment his vision began to fail, at first in the L. E., but soon also in R. E., and in a few days he was attacked with diplopia, and he said his L. E. diverged. Vision grew worse very slowly, but the diplopia after a while, owing to treatment probably, began to improve, and

at present there is no trace of it. About four weeks before I saw him he began to complain of a sense of weight and fatigue in back, most marked in cervical region, and a numbness and coldness of R. foot, beginning in toes, and gradually creeping up until it has almost reached the knee. The foot and leg feel very heavy, and he has considerable difficulty in walking. No apparent loss of power in legs or arms, and no painful sensations in extremities. No point of tenderness in spine. Examination of eyes shows $V. = \frac{20}{1XX}$, no limitation of field of vision, no disturbance

of colour-sense, motility normal; but well-marked neuro-retinitis in both eyes, with swelling of papillæ, and a sodden-infiltrated retina.

Treatment.—Mercurial inunction twice daily, and potass. iod. grs. xx *ter die*, with ol. morrhue and iron, as patient was markedly cachectic. This treatment was carried out for nearly four months and the potass. iod. was increased to 5j doses, with an amelioration in the condition of the spine and also some improvement in power of sensation of right leg. But the neuro-retinitis remained strangely and obstinately unchanged throughout, though I thought I could detect some diminution of retinal infiltration. This patient was seen last week and a careful examination showed the same amount of vision, and absolutely no change in the condition of the fundus. But the spinal symptoms had entirely disappeared, and the sensation and power in leg and side were normal.

This patient escaped all constitutional symptoms except a mild eruption, for seven years, and then the first neurosis was optic neuritis, which was binocular, and was soon followed by paralysis of left *third* nerve. Then came the signs of sensory paralysis of right lower extremity. The order of occurrence of these symptoms points to a lesion, probably a gumma, in or just outside the left optic thalamus, involving or pressing upon perhaps the left crus cerebri, pressing upon and paralyzing the left third cranial nerve, yet not completely, for there was no ptosis. The left optic tract had probably previously been involved and had set up neuritis in both optic nerves; lastly came the signs of anæsthesia in the right foot and leg. Still it is possible that there was a second lesion in this case, in the spinal cord, which pressing upon the posterior columns or posterior roots of the spinal nerves, could have caused the symptoms complained of. The optic neuritis in this case also showed a marked tendency to resist treatment, and remain unchanged for a long period of time.

CASE IV. *Paralysis of both Third Cranial Nerves, and of Right Sixth Cranial Nerve; Optic Neuritis.*—Herman M., æt. 36. First seen May 22, 1876. Primary lesion five years ago, rapidly followed by constitutional symptoms, most obstinate being rheumatoid pains, which, at first transient and slight, soon became very severe and almost constant. No syphilitic neuroses of any kind till November, 1875, four and a half years after initial lesion, when had sudden paralysis of all branches of left third nerve, with ptosis and dilated pupil. Under proper and well-directed treatment, was entirely cured in February, 1876. In March, 1876, began to suffer from severe right hemiparesis, and neuralgia of neck and right side of face and right arm. In a few days there suddenly occurred complete paralysis of third nerve in both eyes, except that there was no ptosis, and also paralysis of right *sixth* nerve or abductens. He was again put

under treatment, by his physician, and again amelioration set in, but the muscles, though regaining some of their power, still remained paretic, and his vision began to fail. When I saw him in May, the right motor oculi had regained considerable power, but the abducens was still completely paralyzed. In the left eye the improvement in the third nerve was much less advanced, though the internal rectus had considerable motion. Both eyes were slightly prominent, and the ocular conjunctiva hyperæmic, and at the canthi chemotic. For last two weeks patient has had considerable difficulty in swallowing, and all liquids showed a tendency to regurgitate through nostrils. Soft palate and superior constrictors of pharynx found paretic on examination. $V. = \frac{20}{L}$ oc. utr., no limitation of field, no dis-

turbance of colour-sense, double optic neuritis, most marked in right eye with infiltration of disk and retina. After three months' treatment byunction and potass. iod., there was a small improvement in condition of all muscles of both eyes, except right abducens, which remained immovable. The neuritis had nearly subsided, but vision remained unimproved, though optic nerves showed no tendency to pass into atrophy. But the paretic condition of the palate and pharyngeal muscles disappeared entirely.

In this case the localization of the cerebral lesion is a matter of great difficulty and uncertainty. The right hemiparesis, with paralysis of right third and sixth nerves, would point to the right side of the base as the seat of the trouble, and if the lesion extended over the median line, it would explain the paralysis of the left third nerve. But the paralysis of the palatal and pharyngeal muscles is of obscure causation. If the base of the brain were the seat of somewhat extensive meningitis, or even of gummy infiltration, this might extend far enough to involve the facial nerve. But in this case we would probably meet with other symptoms of facial paralysis to help us in our diagnosis which did not exist here. The persistence of the paralysis of the third nerves, and the right sixth nerve, shows that positive degeneration had taken place in the nerve fibres, while the improved vision and subsidence of the optic neuritis prove that the conductivity of these fibres is still intact. In any event the case is of interest from its obscurity.

CASE V. *Total Paralysis of all the Ocular Muscles.*—V. T., æt. 28 single, first seen in February, 1874. Primary lesion in August, 1873, and secondary symptoms followed, though none of them well marked. In November, 1873, after considerable pain in temporal and occipital regions, she noticed a drooping of both upper eyelids, which rapidly went on to double complete ptosis. Also noticed that when lids were raised she saw double, and that the eyeballs were almost immovable in every direction. The pupils were also dilated. When first seen in February, 1874, she had constant pain in supraorbital regions, complete immobility of eyes, ptosis and dilated pupils, $V. = \frac{20}{OC}$ oc. utr., no limita-

tion of field of vision. General hyperæmic condition of fundus, and a low grade of retinitis in both eyes. Veins engorged and pulsating, retinae sodden and œdematous. General condition of health good. Remained under treatment for several months, during which time she was almost

constantly under the influence of mercury and potass. iodid. The vision improved somewhat so that she could read $\frac{20}{60}+$ but no change appeared in the muscles or fundus of either eye. In June, 1875, she again applied for treatment, and was taken into the N. Y. Eye Infirmary. An examination at that time showed still almost complete immobility of eyeballs, though there was some slight motion upwards, indicating that superior recti had regained some power. But the other muscles were motionless, nor was there any improvement in the ptosis. Pupils moderately dilated and immovable. Fundus still hyperemic and retina cedematous, but no perceptible change in optic nerves. V. = $\frac{20}{60}+$.

On this occasion patient remained under continuous observation and treatment for a full year. There resulted considerable improvement in the ptosis and a slight improvement in the external recti muscles, so that there was a slight motion outwards of eyeballs, as well as upwards. Vision, however, remained the same, and there was no perceptible change in the fundus. All head symptoms had ceased, and the patient had learned to suppress the annoyance caused by the diplopia.

Here again we meet with an obscure condition of the optic nerves, with tendency to permanent amblyopia. Merely a low grade of retinitis, with but little exudation, clear media, no signs of atrophy, and yet marked diminution of vision, which remained unchanged for over a year. The central lesion was probably a more or less diffuse gummy infiltration of slow growth, accompanied possibly by a low grade of inflammatory action, but by no head symptoms except frontal headache. The marked resistance to treatment is of interest as showing that even the long-continued use of potass. iod. in syphilitic neuroses, will sometimes fail of benefit.

From these cases it may be seen that syphilitic neuroses show a marked tendency to relapse, when they belong to the class of later manifestations. Another characteristic that may be affirmed of them, I think, is that the later they occur, the more unfavourable is the prognosis. The formation of a distinct gummy tumour, or even of a mere gummy infiltration of a nerve or its envelope, too often leads to actual disorganization; for though they may be absorbed by proper treatment, as they undoubtedly often are, yet they constantly tend to form again. I have learned to expect a recurrence, even in spite of long-continued treatment.

One word in regard to the treatment of these cases of muscular paralysis by electricity or galvanism. In the two cases of ocular paralysis just detailed, both the induced and galvanic currents were faithfully employed for a long period, but without avail, though the galvanic current produced contractions in the paralyzed muscles. It may possibly aid internal medication in some cases, but in the two above mentioned the mischief had occurred too long before, and the loss was irremediable.

ART. VII.—*On the Mechanism of Occipito-posterior Positions of the Vertex.* By H. G. LANDIS, A.M., M.D., of Niles, Ohio. (With four wood-cuts.)

In a paper published in this Journal for April, 1876, I have endeavoured briefly to point out a more exact correspondence between the foetal head and the pelvic passages than has been heretofore taught; and also to exhibit the great simplicity of the pelvis and of the mechanism of labour as well, when the former is regarded as a double canal. These statements were substantially limited to occipito-anterior positions of the vertex. It now remains to be seen in what manner occipito-posterior positions conform to these views, and what further light on pelvic anatomy a study of their mechanism may furnish. At first sight there appears to be no reason why the same mechanism will not answer for both anterior and posterior positions. If the calibre of the tube, so to speak, is elliptical in outline, it might be supposed that either pole of a projectile having an elliptical transverse section might be placed to one side. But we notice at once that the foregoing is only a half truth. The passage is "rifled," and the projectile constructed to fit this adaptation. In other words, all parts of the pelvis are not equally resistant, and all parts of the head are not equally yielding. To state a conclusion in advance, for the sake of calling attention to it more prominently, we find that anterior rotation is determined by the coincidence of the most resistant parts of the pelvic canal with the most unyielding and incompressible parts of the foetal head. These parts are respectively the ischial spines and the parietal protuberances. When these points of mutual resistance do not conflict, as in a roomy pelvis, or with a small head, posterior rotation is as likely to occur as anterior rotation; that is, the elliptical section of the head may traverse the same simple spiral course as in an occipito-anterior position, the poles of the ellipse being reversed. This latter condition is sometimes artificially produced by the compression of the forceps when applied to the sides of the child's head, in which case also posterior rotation may occur. We will suppose a head descending in the right occipito-posterior position. After becoming demi-flexed, it follows the line leading from the pectineal eminence to the ischial spines, substantially as in an occipito-anterior position. No special difficulty occurs until it nears the ischial spines, at which point the double character of the canal ceases (*vide* Fig. 12). Here the right parietal boss is just behind the left ischial spine, and the left boss is just in front of the right spine. Before posterior rotation can be completed, these two protuberances must ride over the spinous processes; and if each is of normal prominence, the more energetic the expulsive force the more difficult will this feat become. This, then, is the reason why another direction must be taken. In the mean time

there is an arrest of the head. By reference to the diagram (Fig. 1), it will be seen that anterior rotation involves the transfer of the head from

Fig. 1.

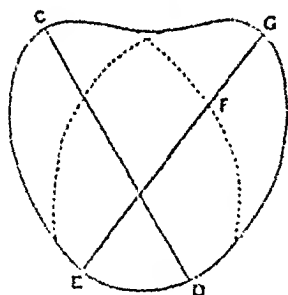
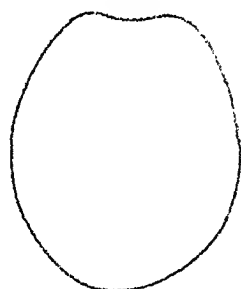


Fig. 2.



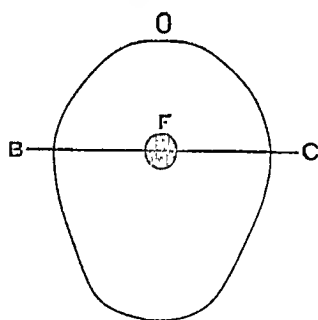
the right to the left canal, for this is what is meant by stating that after anterior rotation the labour is terminated, as in a second position of the vertex. The diagram (Fig. 1) is outlined from Hodge's section of a pelvic cast,¹ showing the plane of the second parallel, which being a little above the plane of the ischial spines does not give exactly the true state of affairs under consideration, but purposely exaggerates the divergence of the canals for the purpose of making the fact of the transfer clearer. The real condition is midway between this and that represented in Fig. 2, which is similarly outlined from Plate III., Fig. 21, of Hodge, which shows the plane of the ischial spines, or the third parallel. The line CD will represent the antero-posterior diameter of the head before rotation. When this is complete, the line CD will have changed, not to EG, but to EF, for it is obviously impossible for CD to turn in its entirety, especially when we remember that the true pelvic outline is more nearly as in Fig. 2. It is also obvious that the diameter EF is not the same *quoad* the head which occupied the line CD. But, as is well known, continued *flexion* of the head has brought a nearly circular plane of the child's head, viz., the cervico-bregmatic, coincident with the plane of the ischial spines, or a little above. Continued expulsive force, therefore, acting on a head in compelled arrest, results in extreme flexion, and this presenting a circular instead of an elliptical plane, there is no longer any impediment to anterior rotation; and the position becoming an anterior one, descent proceeds naturally. Neither is the extreme flexion any longer required, for EF may now be extended to EG. In fact, after passing the plane of the inferior strait, extension is required.

This, then, may be regarded as the first or most natural mechanism of delivery in occipito-posterior positions. If, however, the ischial spines and parietal protuberances do not offer sufficient mutual resistance, the occiput may remain posteriorly placed throughout, which may be regarded

¹ System. Plate III. 20.

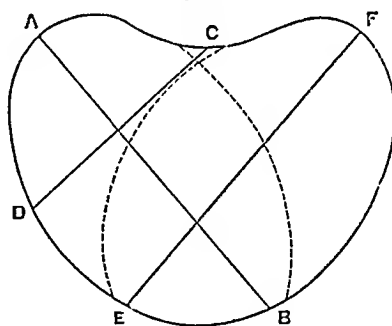
as the second method of delivery. As before stated, compression by the forceps may result in overcoming this resistance, and determine the posterior rotation. In seven cases of occipito-posterior positions delivered by the forceps, of which I have notes, three resulted in anterior rotation; in none of which was there any more compression used than was necessary to prevent the instruments from slipping. In three of the other cases the disproportion was decided, and considerable compression being used, complete posterior rotation occurred. In the remaining case the occiput remained posteriorly until an unusually large head had fairly passed through the inferior strait, and was distending the perineum to a dangerous extent; in fact, a slight tear had begun, and a large surface of the vertex was in full view. I then removed the forceps, and allowed two pains to pass unassisted. I then placed the thumb of the left hand on the posterior fontanelle, and the middle finger a little back of the anterior fontanelle, against the overlapping sutural edge; and with the next pain endeavoured to force anterior rotation. Though it was an instinctive experiment rather than an attempt well founded in reason, the result justified the trial, for before the pain ended anterior rotation had occurred, and the head had glided over the perineum. A similar case to the foregoing is narrated by Cazeaux (5th Am. edition, p. 327), in which the occurrence was spontaneous. We have, then, a third possible method to wit, anterior rotation on the perineum. A fourth mechanism, which

Fig. 3.



Outline of foetal head. F, Foramen magnum;
O, Occipital pole.

Fig. 4.



Outline of superior strait.

in point of frequency, might rank second or even first, is anterior rotation at the brim, and before the head has really engaged in the initial strait. In ten cases without instrumental interference, of which I have notes, six rotated anteriorly at the brim. It must be added, however, that in several of these, internal or external manipulation, or both combined, were employed to further the natural efforts. The following facts seem to afford a partial explanation of the manner in which this rotation takes place. Fig. 3 is designed to represent diagrammatically the outline of the foetal head, or rather of that plane section thereof which is coincident with

the initial plane of the pelvic canal at the beginning of labour. It may be well to remark here, that the outlines of the fetal head and of the dried fetal skull are two very different things, which apparently are sometimes confounded. The former is regular in outline; in the latter, the more ossified portions stand out in relief. The foramen magnum, F, is seen to be appreciably nearer the occipital pole, a fact which is stated also by Schröder (*Manual*, p. 77). Hodge appears to have thought otherwise, but the fact is so patent to any one who will look at a fetal head in demi-flexion, that it is unnecessary to speak further of it. On reflection it will appear that this proximity increases directly with the degree of flexion. Now the axis of the shoulders (BC) passes through the foramen at a right angle. Let us apply this section to the pelvis. Fig. 4 is an outline of the so-called superior strait. The dotted lines complete the elliptical outlines of the initial planes of the two canals of which the pelvis is made up (*vide* former article). If the head is so situated that the occipital pole O of the section represented in Fig. 3 is opposite B, being thus in the 1st occipito-anterior position, the long axis of the shoulders is placed over the diameter EF, and ready to be coincident with that ample diameter after the descent of the head. If, however, the section is reversed, and the pole O is placed at A, the head being thus in the right occipito-posterior position, the axis of the shoulders lies over the line DC. Thus the right shoulder impinges on the lower lumbar vertebra, which may serve the purpose of directing the shoulder on one side or other of the promontory. If the shoulder should slide to the right (towards A), a little reflection will show that the head will have difficulty in maintaining its posterior position from the increased twist in the neck. As soon, then, as flexion has continued long enough to bring the cervico-bregmatic plane of the head coincident with the initial plane of the pelvis, anterior rotation takes place. If, however, the shoulder should slide to the other side, and the shoulders thus lie in the transverse diameter of the brim, with the back posteriorly, anterior rotation becomes evidently impossible by any means compatible with the integrity of the neck, so long as this position of the shoulders is maintained. This would lead to the practical conclusion that no attempt to assist occipito-posterior positions in any case should be made until the status of the shoulders is determined, seeing that they have an important relation to the permanence of this position. Independently of this movement of the shoulders upon the promontory, the mere grasp of the uterus upon the child's body is sufficient to insure continuance of the original position until external manipulation is put in practice. Finally, since the posterior position is necessarily more difficult than the anterior, owing to the relation which the shoulders occupy to the head, two things must be borne in mind in attempting to make a favourable change. First, as the canal is substantially of elliptical outline throughout, the head cannot turn until it presents a circular plane whose diameter

corresponds to the shortest diameter of the elliptical plane in which the turning is to be made. Flexion, therefore, is the first requisite in all methods. Secondly, to make the rotation feasible, and with safety to the child, the shoulders must also be rotated, so that the child's back shall present anteriorly.

ART. VIII.—*A Case of Addison's Disease.* By WILLIAM PEPPER, A.M., M.D., Prof. of Clinical Medicine in the University of Pennsylvania.

SINCE Addison, in 1855,¹ published his classical account of a peculiar form of anæmia attended with bronzing of the skin, this subject has attracted much attention, a considerable number of cases have been placed on record, and many memoirs have been written upon it. Comparatively little has been added to his admirable description of the symptoms and course of the disease, and the following brief summary of the leading and characteristic features may still be quoted: "Anæmia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change of colour in the skin." It is certainly a rare form of disease in this country, if we may judge by the great rarity with which it appears as a cause of death in the mortality reports, and by the small number of cases which have been placed on record by American authors. Thus of 230 cases of Addison's disease tabulated by Greenhow in the last edition of his monograph on this subject, only 10 are quoted from American sources. However, since the causes of Addison's disease, as far as we are acquainted with them, are equally operative here as in other countries, it seems more probable that the apparent frequency of its occurrence in England, especially in London, is partly due to the great degree of attention which the subject has there received and to the greater readiness with which it would consequently be recognized. I have myself met with three perfectly developed cases of this disease; one of these is still living, in the second year of its course; the other two have terminated fatally. In one of the latter, an autopsy could not be obtained; but in the remaining case a careful examination was made, and, in consequence of the rarity and importance of such complete observations, I have felt justified in publishing the notes of the case at full length. In addition to these three cases, I have met with several others in which a peculiar discoloration of the skin, similar to that in Addison's disease, occurred in conjunction with some of the general symptoms of that affection; but in which, either by the recovery of the patient and the disappearance of the

¹ On the Constitutional and Local Effects of Disease of the Supra-renal Capsules, Syd. Soc. Ed. of Addison's Works, p. 291.

symptoms or by actual post-mortem examination, it was shown that the fibro-caseous degeneration of the supra-renal capsules, which is regarded by many as the characteristic lesion of Addison's disease, did not exist. This does not include cases attended with discoloration of the skin of a different character from that present in Addison's disease (vagabondism, chronic phthisis, chronic hepatic disease, chronic malaria, etc.); of these I have observed a considerable number. In the present article I wish merely to place upon record the complete case above referred to, leaving for discussion in a second article, to appear in the following number of this Journal, the interesting questions connected with the nature of this affection, and with its relations with disease of the supra-renal capsules and also with some seemingly analogous forms of disease.

Mr. C. L., æt. 40 years, has enjoyed good health, and has followed the life of a farmer. His only known hereditary tendency is to nervous disease, one of his aunts being insane, a sister highly eccentric and hypochondriacal, and two of his own children having suffered during their early years with eclampsia. He himself is a man of nervous temperament, but cheerful and even humorous in disposition.

He had never suffered from syphilis, scrofala, rheumatism, or malaria. He states that for years he has found such work as digging potatoes, etc., almost instantly cause marked pain across the small of the back. He never met with any injury. More than four years before I first saw him, he began to notice gradually increasing weakness, occasional vertigo, and steadily deepening discoloration of the face, groins, and hands. He continued to pursue an outdoor life with much exercise for about a year, when he found it necessary to accept a position in a railway office. His weakness, however, continued, though not steadily, to progress, so that of late, on getting through his day's work in the office, he has been entirely exhausted. He feels his legs ache after a few minutes' walk. There was also decreasing power of resisting cold. Occasionally also, while warm and within doors, he has noticed that his thumbs and some of his fingers and toes grow numb. During the past two or three years, he has had occasional spells of marked nervousness, attended with impaired sleep and disturbing dreams; at times also he has suffered from depression of spirits. He has never noticed any febrile action. There has been scarcely any loss of flesh; he has always been a man of spare habit; height about 5 ft. 10; weight 138 to 144 lbs. His appetite has been very variable; two years ago it was voracious, but for the past year it has been growing capricious, and he has often experienced nausea and epigastric uneasiness or actual pain. This has sometimes been caused even by drinking a little water. There have also been occasional attacks of gastric disturbance, attended with the vomiting of much bilious matter. The bowels have usually been costive. The urine has varied in quantity, at times being dark-reddish and usually depositing a sediment. The only pain which he has complained of has been deep seated in the lumbar region, and dull and aching. He has also occasionally suffered from attacks of profuse sweating. The discoloration of skin first appeared in the face, and has subsequently involved other parts of the surface, as will be hereafter described. The increase in debility has not been uniform, but from time to time there has been temporary improvement, so marked in character as to raise delusive

hopes. He tried hydropathy for some time, with apparent relief to the profuse sweating; and subsequently he has used iron, strychnia, and quinia, with temporary benefit.

He had been about two weeks before consulting me, October 22, 1869, upon a holiday trip of several weeks, before which he had been very much run down, but while away from work he regained health and strength and became able to walk considerable distances. Upon returning to Philadelphia, he unfortunately immediately resumed his full duties, and very soon began to run down again. This expressed itself chiefly by a growing sense of muscular debility, which became so great that, for a few days before visiting me, he found the exertion of walking even a single square fatiguing. After his first visit to me, he continued to go to his office, avoiding all walking and standing as much as possible, for three or four days, when he found that it had become absolutely impossible for him to continue this, and voluntarily took to his bed.

His condition on my first visit, Oct. 27, 1869, was noted as follows:—

There is marked discoloration of the face and neck from about one inch below the line of the hair (about the line to which the hat reaches), down to the line of the collar. The colour is less deep over the central parts of the forehead, and under the cover of the arch of the eyebrows than over the cheeks and nose. It is most intense over the neck, skirting the line of the scalp, and extending down to the base of the neck. The colour of face and neck is of a quite deep brown with a slight yellowish tinge, or almost like mahogany.

There is slight discoloration of the skin in the axillæ, especially on the folds of the armpits; so, too, in the popliteal spaces it is slight, and most marked along the external and internal hamstring tendons.

There is also a streak of similar discoloration, rather light in degree, over the lower dorsal and lumbar spinous processes. The skin over both groins, the upper part of the inner aspect of the thighs, and over the genitals at times presents a uniform and comparatively slight discoloration, but at other times irregular splotches of discoloration have appeared, even darker than on the face, but have not been permanent.

The hands are deeply discoloured, the colour extending a short distance up the forearms, gradually fading. The matrix of the nails is not discoloured, but, on the contrary, they are unusually white, so that the nails contrast curiously with the fingers and hand. The discoloration does not extend to the palmar surface, but terminates abruptly along the middle of the lateral aspects of fingers and hand. The nails have been brittle for a long while, and the skin is very dry, stiff, and somewhat scaly.

The colour is almost uniform where it is most dark, and in all parts is lighter towards the edges of the discoloured areas, where also there are little spots of lighter colour breaking its uniformity. No patches of deeper colour are present on the discoloured parts, nor any dead white patches of vitiligo.

It is thus seen that the abnormal deposit of pigment has occurred most markedly at those parts where there is usually more or less coloration from exposure to the sun. The other points of its deposit are those where there is naturally a tendency to its production, as the neighbourhood of the genitals, the axillæ and popliteal spaces, and along the spine.

In connection with the effect of exposure, he states on inquiry that until manhood he was much freckled, but since the disappearance of the freckles at that time, exposure to the sun has never redeveloped them.

It may here be stated that six weeks after this time (December 6, 1869) after constant confinement to bed, and when all bleaching influence of confinement might well be supposed to have occurred, di-coloration is still marked, as will be further described below.

The conjunctivæ are perfectly clear. There is no positive di-coloration of the mucous membrane of the lips, mouth, or tongue.

His muscular strength is very much impaired. There is utter loss of desire for effort, so that he lies contentedly in bed day after day without ever expressing the least desire to rise even for a moment. Indeed the mere effort of sitting up in bed worries him much, and when he gets out of bed to sit in an easy chair while the bedclothes are being changed, he slips down on to floor. The power of grasping with his hands remains fair. As he lies in bed he is not conscious of any sense of weakness or exhaustion; but, as nearly as he can express it, is merely utterly devoid of that instinctive sense of muscular tonicly and tendency to muscular movement which exist so markedly in vigorous and muscular subjects.

So great did his exhaustion appear to his family that, on my entering the house, his wife informed me that she believed he was in the early stage of an attack of typhoid fever. He also complained that in turning in bed or making any sudden movement, he frequently had pain in the muscles or joints, as though he had strained himself.

He is now bright, cheerful, and contented. There is no disturbance of special senses or failure of mental power. He frequently wakes at night, and fancies some one entering the room, but instantly dispels this illusion, and soon gets to sleep again. His nervous condition is very much better than formerly, for he has at times been subject to severe attacks of insomnia, with great agitation. Electro-muscular sensibility and contractility unimpaired. There is no incoördination of movement, though lately his hand-writing has been cramped and awkward.

There is not the slightest febrile action. Temperature of extremities is reduced, and he constantly keeps bottles of hot water in bed with him. Respiration quiet and regular. Pulse rather small and compressible, about eighty in minute. Heart's sounds rather feeble, but normal. The tongue is clean, well shaped, and moist. Appetite capricious and not vigorous. Digestion fair, but readily deranged by any irregularity in diet. Bowels constipated, but rarely requiring use of laxatives. Abdomen rather scaphoid—indolent. Emaciation not at all marked. Urine free, rather dark coloured, often throws down deposits (urates?). In two specimens I found a specific gravity of 1016; no albumen; rather high coloured; on standing in moderately warm room, threw down rhombs of reddish-yellow uric acid in abundance.

He was put on use of pil. ferri iodidi, gr. j, t. d. p. c., and pill containing quiniæ sulph. gr. jss, acid. arsenios. gr. $\frac{1}{16}$, ext. Ignatiæ, gr. $\frac{1}{4}$, t. d. a. e. and magneto-electric faradization, applied morning and evening (fifteen minutes each). One pole was applied over spine, along dorsal region, and over kidneys, and the other around the space below the ensiform cartilage down nearly to umbilicus.

Diet.—Beef-tea, whiskey, f5j, Madeira wine, f5ij, q. d., cream, O $\frac{3}{4}$, and other articles of digestible, nutritious nature.

Temperature in Axilla.

Nov. 16	.	.	.	.	99.1°	11 A. M.	99.4°	9 P. M.
" 17	.	.	.	.	98.6	9½ "	100	8½ "
" 18	.	.	.	.	98.4	8 "		
" 19	.	.	.	.	98.4	8½ "	99.6	8½ "
" 20	.	.	.	.	98.4	8 "	99	8 "
" 21	.	.	.	.	97.8	8½ "	98.8	8 "
" 22	.	.	.	.	98.2	8½ "	99 6	8 "

Nov. 22. Treatment steadily continued, and some slight improvement has certainly occurred. Remedies have agreed perfectly with him. He has had an attack of vomiting and looseness of bowels, evidently caused by slight indiscretion in diet, and readily checked. Temperature is now better, and maintained with less artificial aid. Amount of iodide of iron doubled.

27th. Slight improvement continuing. Some slight gain in muscular power.

Stopped pills of quinia, Ignatia, and arsenic, and ordered pil. argent. nitratis, gr. ½, t. d. p. e. Continues pil. ferri iod. gr. ij, t. d. Diet continued. Cream reduced to Oss. Daily faradization continued.

In addition to other improvement noted, he is gaining flesh, temperature more steadily maintained, appetite more uniform and vigorous.

There has been slight lowering of the colour line on forehead, and slight diminution in colour of portion of forehead, and also of part of nose. The hands have grown lighter, and skin much more supple, and less dry and scaly. Gets out of bed more willingly and walks a few feet. Pulse stronger and about seventy-two.

Dec. 6, 1869. Treatment has been steadily continued, remedies (silver and iron) agreeing excellently. He is less sensitive to electric currents, owing probably to increase in fat, which is very positive. Very slight change in colouration of face; hands are lighter, and skin more soft and supple. During the past few weeks there have been noticed, for the first time, small dark spots appearing on hands, like dark-brown freckles. There is also a little ring of brown coloration around a number of the orifices of hair follicles.

His appetite is uniform and good, and digestion good, and bowels regular. Irregularities in diet give him nervous and restless nights. Muscular strength has increased so much that for past week he has been out of bed twice every day to walk a little; and to-day, for first time, he got out of bed and went down stairs to dinner, being out of bed one and one-half hours. He was a good deal fatigued afterwards.

From this time he steadily progressed for several weeks, eating well, maintaining his temperature perfectly, gaining flesh slightly, and strength very positively, so that on Christmas day he rode one-half mile to dine with his mother, and returned without any excessive fatigue. Another day he walked a short distance in the warm sunlight. A few days after this, however, he had a sudden attack of digestive disturbance, entirely causeless, unless it be that he had over-exerted himself. He vomited frequently, had some diarrhoea, and was much prostrated. It became necessary to feed him on small quantities of beef-tea, brandy, and cream, and milk and lime-water, given at short intervals. He rallied from this but did not regain his former point of strength, but gradually lost ground.

The discoloration of the face remained at the same limits, but there was a slight decrease in the depth of the colour. The other patches of dis-

coloration (axilla, groins, etc.) became lighter. The dark spots which had appeared over the discoloured skin on back of hands grew smaller and lighter; and, indeed, the whole shade of colour of back of hands grew lighter, so that the abrupt line of demarcation, before described as visible on the sides of the hands, became less marked.

His temperature continued to keep up quite well. His pulse gradually became rather smaller, weaker, and, at times, rose from seventy-two to eighty-four. He was never subject to either palpitation of the heart or dyspnoea, and had no cough.

His muscular strength gradually failed, and again he ceased to have any desire to leave bed, took no exercise, and was much fatigued by sitting up while his bed was being made. He complained less of pain caused by sudden movements, though when questioned he said he still *strained* himself quite frequently. He also lost flesh slowly and assumed a more anæmic appearance. The skin was usually dry, but he sweated at times over forehead and flexures of joints, axillæ, etc. He had noticed no change in natural odour of axillæ.

His appetite was very capricious, and he wearied of almost every article of food after using it a few times. Beef-tea alone he invariably relished. His appetite was also very irregular. At the fixed meal times he would often be utterly without desire for food, while at varying intervals he would be seized with a sudden sense of faint sinking at epigastrium, craving food instantly. This sensation would be relieved by almost anything taken, cold water, beef-tea, etc., apparently by the mere presence of the article. At other times he would have a well-defined desire for some special article of food, and yet before the few minutes requisite to prepare it had passed, he would be utterly unable to take it. Still again he would be seized with sudden aversion to food as he saw it carried toward him, or as the smell of it reached him, and he would be obliged to have it placed aside for a while. These nervous impressions were, at times, associated with nausea and a desire to vomit; but more frequently were not so. He also experienced at times what seemed a spasmodic contraction of the œsophagus, accompanied by slight gagging, but rarely causing actual vomiting. Quite frequently the mere contact of solid food in his mouth, still more the effort of chewing it, would excite this gagging. He vomited comparatively rarely; when he did so, it was often without nausea, but seemed excited by the mere presence of food, and occurred instantly on arrival of food in the stomach, and was followed by relief. The matters vomited usually consisted of food taken, mixed with mucus and glairy fluid; at times yellowish, bilious fluid was rejected. Occasionally the reflex irritability of œsophagus and stomach would be so great, that the presence of a tooth brush in his mouth would cause gagging, though never actual vomiting.

His tongue was always moist; epithelial coat somewhat thick and roughish.

Bowels inclined to be costive, apparently from atony of muscular coat, readily relieved by rhubarb, gentian, and belladonna. The abdomen was usually retracted to slight degree. No abnormal aortic pulsation; no tumour.

There was distinct, quite marked tenderness over lower part of the epigastrium, including an area fully 2×2 , midway between umbilicus and xiphoid cartilage, and extending rather more to left of median line than to right. This tenderness was more marked for pressure by small

objects, as tip of finger, than by larger objects, as palm of hand. There was also marked reflex irritability of abdominal muscles: thus tickling the skin at the end of 10th rib caused unusually marked contraction of rectus of that side.

Urine usually seemed quite healthy; it varied from time to time in its colour, and in amount of deposit thrown down on standing.

His mind remained entirely bright, and all its faculties good. His spirits gradually became somewhat depressed, and he grew nervous and even irritable to a slight degree. His sleep was variable, at times quite sound, at others broken and restless.

The use of faradization became irksome to him, and, as it evidently was no longer productive of any benefit, it was discontinued.

He took quinae sulph. gr. ij and strychnia sulph. gr. $\frac{1}{40}$ @ $\frac{1}{24}$ before meals. After a little while this became intolerable, and was stopped.

He then took pepsin and quinia before meals; bismuth subnit. gr. xv; pulv. aromat. gr. v after meals. This suited him for awhile, but soon disagreed with him, and he continued to take only the powders of bismuth, which always suited and relieved him.

He also resumed nitrate of silver in pill form after meals, but after a few weeks, during which it seemed to benefit him, he had a bad spell of vomiting, and took a violent repulsion to it.

After this a mixture of cod-liver oil (containing phosphorus gr. $\frac{1}{60}$ and ether gtt. v to f3ss), made up with aromatics, was tried in very small (f3j) doses, but after a few days became repulsive and nauseating to him.

About this time, March 1, 1870, he had marked gastric disturbance, and lost one or two meals every day for several days. His temperature fell, so that for a whole day he was quite cool up to the thighs, and required frictions and hot applications to maintain temperature. He was excessively prostrate, only able to lift himself in bed; he was also highly restless and nervous, alternating with great languor and drowsiness.

He was restricted to bismuth powders, milk and lime-water in very small quantities, brandy and cream, beef-tea, every half hour through day and night. He slowly reacted; the intervals were increased; and in four days he was so much improved as to be able to begin with simple food at meal times, taking the other preparations at intervals. He complained of eructations of gas tainted with food eaten before, and wine of pepsin at meal times was again tried. Amount of brandy given was about f3iss @ ij q. d.

After the attack of vomiting, with marked prostration and tendency to collapse noted above, he did well for a few weeks, when, without apparent cause, he was seized with diarrhoea, vomiting, and rapid and extreme prostration. The matters vomited were, as before, the ingesta, and subsequently fluid tinged with bile. The stools were small, serous, attended with some cutting pain at time of discharge, and followed by great sense of exhaustion. All desire for or relish of food was lost. There was great restlessness, and at times almost hysterical irritability, leading to painful agitation, even with paroxysms of crying. The pulse became threadlike, very feeble, about 108; the temperature rapidly fell. The mouth was very dry, lips parched and cracked. A small bed-sore formed over sacrum. Abdomen was retracted, not painful on pressure, save at one spot over greater curvature of stomach. Pulsation of aorta abnormally marked. His voice became thin, very feeble, and almost whispering, and that condition, though it improved as he rallied, continued to a certain extent until his

death. There was now occasional dyspnoea with sense of breathlessness. External warmth was applied, and cloths wrung out of hot brandy and water laid on abdomen. All food suspended, save milk \mathfrak{ss} , lime-water \mathfrak{ss} , brandy \mathfrak{ss} q. q. h., and chlorodyne gtt. xv t. d. ordered. This latter had the happiest effect, securing rest, and allaying abdominal distress and diarrhoea.

After a week he again began to improve markedly, showed desire for food, and slept well, had regular and healthy stools, and improved in strength. He still, however, suffered from abdominal uneasiness.

Soon after another attack, unlike causeless, of diarrhoea and severe abdominal pain, with but little vomiting, set in and speedily reduced him lower than he had been at any previous time. Chlorodyne failed, and he was ordered morph. sulph. gr. $\frac{1}{2}$; acid. sulph. aromat. gtt. xv; eucroon \mathfrak{ss} ; syr. aurantii cort. \mathfrak{ss} ; aq. aurantii flor. \mathfrak{ss} .—*Pt. sol.* S. q. q. h.

This speedily checked vomiting and diarrhoea, and relieved somewhat the abdominal pain, although this continued in less degree. He reacted very slowly, remaining very feeble, with scarcely any appetite: there was occasional vomiting, sudden, unattended by nausea.

No more aphthae formed on lips or tongue. Month continued very dry.

He had been for several weeks troubled with occasional cough, and some mucoid sputa, and there were the physical signs of partial consolidation of the extreme apex on both sides. Heart sounds very feeble, but without murmur; pulse very small, weak, 84 @ 100. Temperature quite well maintained. Mind entirely clear, and at times interest in outside affairs was active, and he expressed hopes of recovery, though he knew inenurable nature of his affection.

Abdomen markedly retracted, and pulsation of aorta excessive. No marked abdominal tenderness.

Discoloration of skin did not increase at all, so that it was materially less than at an earlier stage of the disease. Skin was usually dry, and but rarely was there any actual sweating, and then usually confined to the head. There was no discoloration of the mucous membrane of month. Conjunctivæ continued pearly white. His emaciation steadily progressed, though it never reached an extreme degree.

He remained in about this condition from early part of April until night of April 25, when, after sleeping for several hours quietly, he awoke, stating that he felt very strangely, and sick all over; made a hasty, automatic movement to throw off bedclothes, and died instantly without a groan or struggle.

Autopsy, thirty-six hours after death.—Body in ice, and well preserved. Brain and cord not examined. There was a fair amount of fat in abdominal walls and mesentery; but there was but little in subcutaneous tissue elsewhere, as over thorax.

Thorax.—Lungs: At the apex of each lung was a patch of fibroid induration, involving the upper half of each upper lobe. The pleura over these was thickened, and closely adherent to costal pleura. Upon making a section of this part of lung, tissue was found dense, homogeneous, and fibroid in character, and presenting on each side a small cavity $\frac{1}{4}$ " in diameter, filled with whitish, cheesy material, with a few calcareous granules imbedded. On microscopic examination this cheesy material presented a few altered epithelial forms, and very numerous closely packed cells, round, oval, or shrivelled, with their nuclei usually obscured by re-

fracting granular contents, though in some cases a single, double, or trefoil nucleus was visible after treatment with acetic acid.

The rest of the lung tissue was crepitant and healthy. No pleural effusion; but pleuræ were throughout both sides quite closely adherent by delicate connective tissue.

Heart.—Pericardium healthy; no effusion. Heart small and flabby. Cavities contained small coagula, succulent and œdematous, of a peculiar whiteness, and with these some little fluid blood. Walls of heart were thin, especially that of right ventricle, where the layer of muscular tissue did not actually exceed 1^m in thickness in places. The tissue was rather friable and pale. On microscopic examination the muscular fibrils seemed to be decidedly smaller and thinner than normal. In addition, there was marked diminution in transverse striation, and, in some fibrils, distinct granular degeneration; and, in tissue of walls of left ventricle, streaks of refracting granules in the substance of the fibrils. The amount of blood in the tissues and vessels was very small.

Liver.—Of normal size and healthy appearance.

Spleen.—Slightly enlarged, with unusually distinct trabeculæ; but with soft, rather pale pulp.

Kidneys.—The kidneys were of normal size; capsules healthy, and not too adherent. The only change in the organs was slight granular fatty degeneration of the epithelium.

Supra-renal Capsules.—The fat and connective tissue around both was much indurated, so as to require careful dissection to separate. This was evidently due to a subacute inflammatory process. The right capsule presented a triangular shape, the lower portion being thick and swollen, while the upper end was thin, flat, and somewhat tongue-shaped. On making a longitudinal section the normal appearances were found to be entirely lost. At the lower end the capsule invested an ovoid mass, rather more than $\frac{1}{2}$ " in diameter, of firm, fibroid, cheesy appearance. This was readily enucleated, owing to softening of its superficial layer, and left the investing fibrous capsule quite empty. Microscopically examined, this nodule consisted of sparse fibrous tissue, numerous imperfectly developed fibre-cells, and very numerous round, oval, or angular cells, with refracting granular contents concealing the nucleus, and which were apparently retrograde lymph cells. There was much free fat in granules and globules. On incising the upper and more thin part of the organ, the contents of the fibrous capsule were found to be partly a milky fluid and partly soft, slightly shreddy, pulstaceous particles. In the firmer tissue surrounding these soft collections were small calcareous fragments. The fluid presented many cells like those described above, very fatty; much free oil, and some fragments of crystals of cholestearine. The pulstaceous soft particles of tissue contained similar elements, a certain amount of fibrous tissue, and, in addition, quite numerous very large compound granule cells. It was impossible to say whether these were mere fortuitous aggregations of fatty and albuminous granules, or whether they were due to the fatty degeneration of the large nerve-like cells which normally are present in the central portions of the supra-renal capsules. All traces of the pigment usually present had disappeared; and so also it was impossible to trace the separation originally existing between cortex and medulla. The left supra-renal capsule was much smaller than the right, and formed a puckered, indurated fibroid nodule.

Stomach.—Moderately distended with gas. It contained about three

ounces of turbid fluid, beef-tea and milk mixed, with a few lumps of card floating in it. Towards the pyloric end of stomach there was an area about 3" in diameter, over which the mucous membrane was studded with small yellowish-gray bodies, which a microscopic examination proved to be enlarged follicles distended with granular matter, and small cells closely packed together. Elsewhere the mucous membrane was pale, slightly softened, but essentially healthy.

Intestines.—The ileum was small, and rather contracted. There were no traces of peritonitis. The peritoneal surface of the ileum presented a curious mottling with numerous dark-purplish spots of various sizes, from a mere minute point to $\frac{1}{4}$ " in diameter. There was a slight elevation of the peritoneum at these spots, and upon incising them they were found to be due to the effusion of dark and still fluid blood in the subperitoneal connective tissue. These ecchymoses were quite plainly visible from the mucous or inner surface of the intestines, and in some places they caused slight elevations of the mucous membrane. In some instances, upon incising the spot, the blood was found to have been effused into the submucous connective tissue; though far most frequently it was into the subperitoneal tissue. These ecchymoses were very numerous throughout the greater part of the ileum; a few were found in the duodenum, and a very few also along the colon. The mesenteric and mesocolic glands were slightly enlarged, and one or two of them presented collections of black pigment, as though some ecchymosis of their tissue had occurred. There was no ulceration of any part of the intestine or enlargement of the solitary or agminated glands.

Sympathetic Nerve.—The abdominal sympathetic, including the ganglia and the branches going to the supra-renal capsules, were dissected with great care. The parts presented their normal size, appearance, and consistence, and upon prolonged microscopic examination appeared quite healthy. The nerve cells, in particular, were typically healthy for the most part, and only here and there was there even a suspicion of an excess of granular pigmentary matter in them.

It appears, then, to sum up this extended report, that a strong and healthy man, doing farm work, notices dull, deep-seated pain in the loins on exertion, and gradually increasing weakness without apparent cause. He occasionally has vertigo, and, before long, observes a peculiar brownish discoloration of the face, hands, groins, and genitals. The weakness and discoloration slowly increase for four years, attended with the evidences of anæmia, a very feeble pulse, and with irregular appetite and frequent gastric disturbance. This increase is not steady and uniform, but from time to time there is apparent improvement, always followed, however, by a return, in aggravated form, of the symptoms. There is no fever, chronic diarrhœa, albuminuria, disease of the lungs or heart, enlargement of liver, spleen, or lymphatic glands, nor any other apparent cause for the progressive failure of strength; nor is there any marked degree of emaciation. Finally, so great does his debility and loss of energy become, that he is confined to bed, and every exertion causes faintness and exhaustion. He still has occasional spells of improvement in strength, but these are soon interrupted by apparently causeless attacks of vomiting and diarrhœa. He

becomes intensely anæmic without extreme emaciation, and finally dies suddenly after a slight exertion, about four and a half years from the time when distinct symptoms were first observed.

At the post-mortem examination the supra-renal capsules are found in an advanced stage of fibroid and caseous change; there is extreme anæmia of all the tissues; the heart is slightly fatty; the spleen somewhat enlarged; the glands of the stomach are enlarged, and ecchymoses are found under the peritoneal coat of the small intestine. The lymphatics are not involved; and the abdominal ganglia of the sympathetic are healthy.

ART. IX.—*A Case of Sarcomatous Tumour mistaken for Popliteal Aneurism.* By ERSKINE MASON, M.D., Surgeon to Bellevue and the Roosevelt Hospitals. (With a wood-cut.)

It is not the most pleasant duty for any of us to tell, let alone publish, our mistakes—either as to diagnosis or the treatment of our cases. Were we not so backward in this respect, I cannot but feel that probably we would advance our science and art quite as much as is done by publishing only those cases in which we have been more successful. In this way, at least, we may often prevent others unwittingly committing the blunders we ourselves have made. Indeed, it is only too often we hear the remark made of some that “we only hear of their successful cases.”

The difficulties which often surround the diagnosis of aneurismal tumours are well known, and cases are recorded where our most astute diagnosticians have taken malignant growths for aneurisms, and aneurisms for other morbid growths. The symptoms of both are so clearly set forth in works that all have access to, that at first sight the student might fail to see how error could arise. In practice, however, how often are we assailed by doubts!

In the case we report, to our mind certainly all the signs of aneurism were well marked, and in this view we were confirmed by others; yet the result proved how great was our mistake. Even now, after a careful review of the case, we do not see how we could have arrived at any other conclusion than the one we did; and, though deeply deploring our error of diagnosis, we cannot but feel that, in a case presenting the same features as this one did at first, we would have no rule to guide us from falling into a similar error; unless, it is true, we should resort to an explorative puncture, and this certainly would not be judicious practice in every case of suspected aneurismal tumour, especially where all symptoms appeared so clear. Without further comment, therefore, we give the full history of our case, believing that it will prove of interest and

instruction to those interested in the study of aneurisms or morbid growths.

C. Wagner, æt. 24, German, upholsterer, was admitted into my service at Roosevelt Hospital March 15, 1876. Patient gave his history as follows: Five months before entering the hospital, he began to suffer from pain in his left knee; this occurring after a hard day's work, and gradually increasing in severity. Seven weeks before I saw him, the joint began to "swell behind," and soon after this he could not walk without a cane, and then suffered great pain in the attempt. Outside the hospital it had been regarded as rheumatic, and for this affection he had received treatment; at another time he was supposed to be suffering from hip-disease. He does not remember at any time of having received an injury, but says that of late his work has been that of putting down carpets, and that in this way he might have strained the joint. His family history is not good, being of a phthisical stock.

On admission, there was discovered in the left popliteal space a sacculated oval-shaped tumour, two and a half inches in its vertical and two inches in its transverse diameters. Circumference of affected knee is fourteen inches—healthy knee twelve and three-quarters inches; affected limb just below the knee ten and a quarter inches—sound limb just below the knee eleven and a quarter inches. The temperature of affected knee is greater than that of the healthy one, while the temperature of the sound leg is greater than that of the affected leg. Besides the tumour occupying the popliteal space before described, there is another, apparently an off-growth from it, about the same size extending downwards towards the head of the fibula and upwards along the tendon of the biceps, which appears to be a partially consolidated aneurismal sac. There is no enlargement of the inguinal glands. The limb is semiflexed, and any attempt to straighten the limb causes considerable pain. General condition of patient good.

Upon careful examination, the tumour is observed to have a distinct, eccentric pulsation, which separates the hands when placed upon it. The pulsations of the tibials on this side are considerably feebler than upon the opposite limb. Upon auscultation, there is heard a *loud and distinct bruit*. Pressure upon the femoral diminishes the size of the tumour, and at once suspends the bruit. My diagnosis was at once popliteal aneurism; but having recently had my attention drawn to the difficulties which may surround the diagnoses of aneurism, by a paper on this subject, was more careful in my examination of this case than perhaps I otherwise should have been. The case was examined repeatedly both by myself and my colleagues of both the medical and surgical staff, and the opinion of all regarded it as a case of aneurism; and this, too, was the opinion of others not connected with the staff who examined the case.

I determined to try the action of flexing the leg, and, if that did not succeed, then pressure, before resorting to the ligature. The treatment was accordingly begun on the afternoon of March 17th, about three o'clock. The leg was placed at right-angles with the thigh, and maintained in this position by straps of adhesive plaster. This partially controlled the pulsation, the position soon becoming painful, he was given a dose of chloral.

18th, 9 A. M. P. 120; T. 98½. Pulsation somewhat less, but distinct; flexion was now increased, and ʒij of (U. S. P.) sol. morph. sulph. given to relieve pain. 6 P. M. P. 100; T. 98½.

19th, 9 A. M. P. 102; T. $99\frac{1}{2}$. At 3 P. M., pulsation still continuing, I had digital compression made over the femoral below Poupart's ligament, in addition to the flexion of the knee; this was kept up for three hours and a half by relays of students. 6 P. M. P. 102; T. 99.

20th, 9 A. M. P. 108; T. $100\frac{1}{4}$. 6 P. M. P. 90; T. $99\frac{1}{4}$. Still pulsation in the tumour.

21st, 9 A. M. P. 90; T. $93\frac{3}{4}$. The tumour still pulsating flexion was now stopped, and digital compression made by students for about two hours; during this time the patient fainted twice. Three hours later compression was again used, this time, however, by an artery compressor, and kept up for about an hour; owing to pain, however, it was discontinued; pulsation had greatly diminished. After removal of the tourniquet, flexion was again resorted to, and this time increased so that the heel almost touched the buttock. The following morning, though there was still some fluctuation, the tumour was harder.

23d. P. 86; T. 100. 9 A. M. Digital compression was again employed for about six hours, which resulted in slightly diminishing the force of the pulsation; leg again flexed. 6 P. M. P. 84; T. $98\frac{1}{2}$. Compression was kept up also by the compressor at intervals till one o'clock on the morning of the 26th, when it was discontinued owing to the pain it produced. When I saw him that morning the tumour was certainly harder; pulsation less, yet still very distinct; the knee was quite painful, and there was also more swelling about it. The patient being desirous to change his position, I let him get out of bed and sit up for a while on the 30th. Pulsation and bruit were now as distinct as ever. During this treatment by flexion, which the patient bore with great fortitude, it will be noticed how little variation was noted either in pulse or temperature. Morphia or chloral was administered from time to time to relieve pain and induce sleep at night.

On the 31st of March, at half-past two, in the presence of a class of students, assisted by Dr. Markoe, I ligated the femoral in Scarpa's space. All pulsation immediately ceased upon tightening the ligature, and *never afterwards* was observed. Patient had some pain in the knee after the ligature, but was more comfortable than before for some days; the ligature came away on the 13th of April.

May 1. Dr. Weir took charge of the service; the patient was now suffering great pain in the knee; the tumour had increased in size; the integument was slightly reddened; fluctuation was discovered over the inner side of the tumour above the condyle of the femur. Supposing the sac was suppurating, an aspirator was used, and a little blood and pus withdrawn, and poultice applied.

23d. A sharp-pointed bistoury was introduced, which let out a small quantity of bloody pus.

25th. The following note is made: There is a large oval swelling just above the inner condyle; tumour has increased greatly in size, and around the joint the circumference is sixteen inches. The swelling commences at the head of the tibia, and rises to its greatest diameter at the condyles, and gradually shades off directly along the course of the femoral artery, and to about six inches above the condyles. It greatly simulates a neoplasm. The pain is intense, chiefly extending down the outer side of the thigh and leg. Pain in the tumour is described by the patient as of a "bursting" character. He requires large doses of morphia to quiet the pain.

June 5. Fluctuation is distinct on the upper border of the tumour on the inner aspect of the leg; and a discharge of serum and bloody pus is issuing from the puncture made a few weeks ago.

8th. Discharge continues about the same; no change in the patient.

19th. A spontaneous opening occurred just above the punctured opening, through which an abundant discharge of pus escapes. Patient is fast losing strength.

22d. Dr. Weir amputated the limb in the middle third of the thigh. There was a greater number of arteries required the ligature, and of larger size than is usual in this amputation. The stump treated openly. 7 P. M. Patient had a chill.

23d, 8 A. M. He had another chill, and looks badly; stump looks sloughy.

24th. Passed a more comfortable night; appetite improving.

26th, 7½ A. M. Had a slight chill, but looks much better than he did a few days ago. The flaps have retracted, exposing the bone.

28th. Complains of a feeling of chilliness, but had no distinct chill.

29th, 7 A. M. Had a severe chill; a hypodermic injection of morphia seemed to control it.

30th. Patient had two or three chills during the day.

July 2. Feels better, though had a chilly sensation during the day.

3d. Had a very severe chill last night, and hypodermic injections of water appeared to control them as well as the morphia. 7 P. M. Had a severe attack of vomiting, and complained of pain in the back and shoulders—this was controlled by a hypodermic injection of 20 m. of water.

4th. Stump doing nicely—bone protruding.

7th. He suffers from heel-sore over the sacrum, which gives him much pain, for the relief of which he sat up in a chair nearly all day.

10th. There is a slight improvement in his general condition; stump looks well; an abscess just two inches below Poupart's ligament was opened.

12th. Is not so well; bed-sores give him much trouble, and for relief he often stays in a rocking-chair all night.

16th. Looking badly and losing ground.

30th. Has considerable cough; examination revealed phthisis. His cough continued to give him great trouble, and he died exhausted by his cough and dyspnoea August 5th.

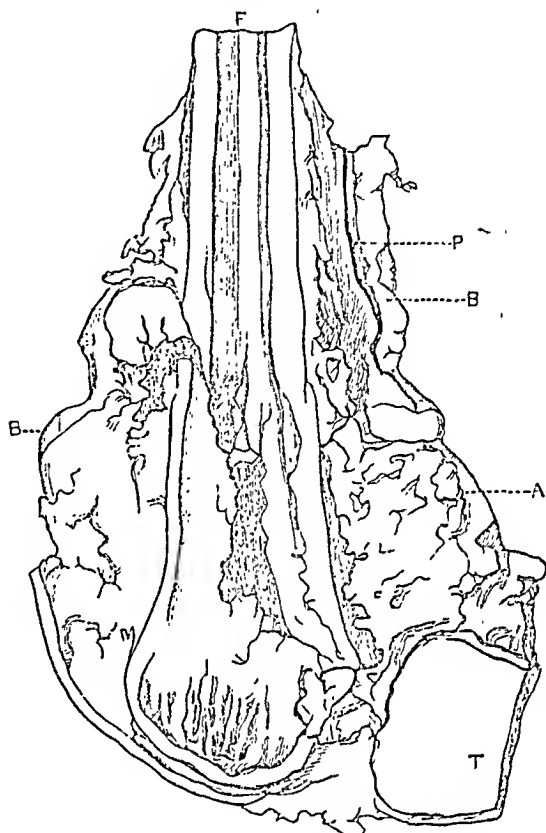
The following description of the post-mortem and microscopic examinations of the specimen has been kindly prepared for me by Dr. Heilmann, Assistant Pathologist to the hospital:—

June 26. Appearance of limb after amputation. On the inner aspect of the lower end of the thigh, and filling up the greater portion of the popliteal space, is a large mass of new tissue, resembling in its regular contour and apparent gross structure the sac of an aneurism laid open, with its contents. This mass seemed to be composed of a succession of layers, like the organized fibrinous layers of an aneurismal clot. The tissue was of a firm consistency, of a dirty brownish-red colour, and coated here and there with pus, with blood, and broken-down tissue.

On passing the finger through an artificial opening made in the lower portion of the popliteal space, it entered a cavity which passed forward to the shaft of the femur. This cavity was partially filled with detritus of broken-down tissue. The lower end of the shaft of the femur was found fractured.

On making a longitudinal median section, involving the shaft of the femur and of the tibia, the following appearances were presented, as described by Dr. F. Delafield:—

"There is a tumour occupying five inches of the lower end of the femur; the tumour has completely replaced the medulla of the bone, and at a point four inches from the lower end of the bone has completely destroyed its shaft, so that there is an oblique fracture. The tumour has grown backwards, so as to form a circumscribed tumour the size of a goose's egg in the popliteal space. On the anterior and lateral surfaces of the femur is a periosteal tumour five inches long and two inches thick. The popliteal artery runs over the tumour in the popliteal space.



A. Supposed aneurism; B B. Secondary growth; P. Popliteal artery; F. Femur; T. Tibia.

"*Microscopic Examination.*—The periosteal tumour consists of an abundant reticulated and fibrillated stroma, with a large number of cells. The cells are round, oval, fusiform, irregular, many large, some giant cells. The medulla of the shaft is replaced by new tissue, also the medulla of the cancellous bone forming the lower end of femur. This new tissue has more basament substance and fewer cells than the periosteal tumour. The shaft of the bone is destroyed by the new growth following the Haversian canals."

ART. X.—*Partial Aphasia without Appreciable Lesion of Island of Reil.* By HORATIO C. WOOD, Jr., M.D., Professor of Materia Medica and Therapeutics, and Clinical Professor of Diseases of the Nervous System, in the University of Pennsylvania.

JAMES D—, æt. 33, presented himself at the University Hospital Dispensary, June 11, 1875. He stated that he had been for a long time under treatment at the Orthopædic Hospital, without considerable improvement, but had discontinued his visits there for some time. Subsequently a history of his case was kindly furnished by Dr. Geo. S. Gerhard

of the Orthopædic Hospital staff; this is here inserted instead of the crude and very imperfect account given by the patient's friends.

"Was admitted as out-patient Oct. 23, 1874. Served in army during war in infancy, and was once slightly wounded. He never had any symptoms of lead poisoning, but had chancre in 1863. He never had any secondaries, and was always perfectly well until two months ago (end of July), when he was suddenly taken with present difficulty of speech. He was formerly addicted to excess, but since early part of July has been temperate. He has not had vision disorder or vomiting, but has suffered, and still suffers, from frontal headache. General health good. Weight 155 pounds. Mother says he is silly, and acts queerly as he never did before, and that his mind is feeble.

"There is marked difficulty of speech (indeed this is the most prominent feature of his case), but there is no actual loss of memory for words. For instance, he related all the details connected with his killing a snake ten years ago. The story was told in a very slow and embarrassed way, but no loss of memory for words was observed during its narration. Grip of right hand feebler than left. An irregular and indistinct blue line on the gums. Eye ground normal. Ordered pot. iod. gr. x, t. d.

"Jan. 2, 1875. Appears to be somewhat better. Continue treatment.

"25th. Improved greatly for some time, so that he was able to resume his work, but now worse again, and the relapse appeared to follow neglect in taking the iodide.

"Feb. 8. Iodide increased to gr. xx, t. d.

"15th. Speech difficulty becoming more marked. Iodide increased to gr. xxv, t. d.

"19th. Iodide stopped. Ol. morrhue and phosphorus gr. $\frac{1}{2}$ t. d. ordered.

"March 8. Oil and phosphorus stopped on account of causing nausea.

"19th. Intellection more sluggish. Elix. quin., strych. et ferri, $\frac{5}{j}$ t. d. ordered.

"29th. Pain in head somewhat better.

"May 7. Very drowsy and mind more sluggish than ever. No paralytic symptoms. Elixir stopped and zinc phosphide ordered. Able to take care of himself. Goes about city alone.

"10th. Ordered hydrarg. chl. corros. gr. $\frac{1}{2}$ t. d. Zinc stopped.

"17th. Returned to report no change. Left off attendance."

When the patient offered himself at the University Hospital he was decidedly worse than at the time he ceased his visits at the Orthopædic Hospital. There was not, however, any distinct paralysis; there was general muscular weakness, but not more than is often seen in chronic disorders; the chief complaints were of a persistent severe frontal headache, with marked paroxysmal exacerbations. There had been no fits, but there was a very decided, although not complete, aphasia. The patient was entirely unable to give any account of himself, or to frame any connected sentences. When asked whether he had ever had the "bad disease," he answered with great slowness and effort "war—rotted me—bitch;" meaning that he had got the disease from a woman whilst in the army. The special senses were unimpaired. Ophthalmoscopic examination showed complete absence of choked disk or descending neuritis; there was some neuroretinitis, which was pronounced by Dr. Wm. F. Norris to be probably the result of the existing high degree of myopia.

Large doses of iodide of potassium were prescribed and the patient sent home. That evening, or the next one, he was seized with violent convulsions, with delirium and unconsciousness. A neighbouring practitioner, having been called in, pronounced the case one of strychnia poisoning, and treated it as such for four days, when I was called in. At this time there was furious delirium, with constant screaming and fighting, but no convulsions. The case was pronounced meningitis, and a fatal prognosis

given. The man was sent on the 18th to the hospital, where, under active blistering, the free use of calomel and bromide of potassium, he got better, but never became rational. About 11 o'clock in the morning of the 29th, he fell into a sleep, which deepened into a stupor, in which he died about four o'clock in the next afternoon.

His pupils were widely dilated and immovable during his stay at the hospital, but on ophthalmoscopic examination nothing more decided than some retinal congestion could be detected.

The notes of the post-mortem, as follows, are extracted from the hospital register :—

"Examination made eight hours after death : *Dura mater* very thick and opaque. Very great increase of cerebro-spinal fluid.

"*Arachnoid* closely adherent over upper surface of brain, opaque and thick with spots of very great thickness here and there.

"Consistency of *brain* about normal to touch. Great thickening and exudation of lymph behind the optic chiasm. Lobes closely agglutinated by exudation. Left side externally seemingly normal. Softening of extreme anterior apex of middle lobe on right side. *Island of Reil* seemingly normal, though membranes over it thickened. *Lungs* normal. *Heart* healthy. A very large ante-mortem clot in the pulmonary artery, also one in left ventricle."

The brain was put in alcohol, which failed to keep the inner portions of the organ. The exterior cortical layer was fortunately well preserved, and good sections of the left *Island of Reil* were made in the Pathological Laboratory of the University, under the superintendence of Prof. Tyson. Prof. Tyson stated that he was unable to find any disease in the *Island of Reil*, and a section sent to Prof. Fitz, of Harvard University, elicited the following note :—

"Your section arrived in good condition. I found occasional pigment granules in the perivascular spaces—a rare glistening round or oblong homogeneous body suggestive of a corpus amylaceum. Also rare, was an apparent increase of nuclei in certain adventitiæ.

"None of these appearances were sufficient in quantity or quality to suggest disorganization of the cerebral substance in the respective section."

Remarks.—The chief interest of the case just narrated centres in two points, the absence of choked disk with general and local meningitis, and the presence of aphasia, without detectable alteration of the *Island of Reil*. The diagnostic importance of choked disk, so far as my experience goes, is not supreme. I have seen what was apparently it in a patient in whom no other distinct evidences of brain lesion could be found during a scrutiny extending over several months, and I have generally found it absent in such cases of brain tumour as presented any diagnostic difficulties, the diagnosis in one of these cases being confirmed by an autopsy, made two days after the ophthalmoscopic examination by Prof. Norris and myself. I do not mean to deny the usual diagnostic import of choked disk when present, but it seems to me in some cases impossible to distinguish it from ascending neuritis, and its absence appears to be of no value in proving the non-existence of cerebral growths, or even of meningitis.

The controversy as to the localization of function rages so fiercely that

the present case will probably be seized upon at once. I have therefore had the matter carefully verified, and it seems to me thoroughly established that there was no appreciable lesion of the Island of Reil. This does not, however, to my mind disprove the theory of speech localization. The aphasia, according to the statement of the friends of the patient, had come on gradually. It was far from complete, although very marked. It is well known that the Island of Reil receives much of its blood supply from the superjacent meninges. These meninges were very much thickened, and it is perfectly possible that there should have been an interruption of circulation sufficient to interfere with the function of the part, but not sufficient to alter its structure in a degree to be appreciated by our present methods of examination.

ART. XI.—*The Relations of Blepharitis Ciliaris to Ametropia.*¹ By D. B. ST. JOHN ROOSA, M.D., Professor of Ophthalmology and Otology in the University of the City of New York, Surgeon to the Manhattan Eye and Ear Hospital.

It is a well-recognized fact that certain forms of conjunctival inflammation arise from uncorrected errors of refraction. I do not think it is generally conceded, however, that blepharitis ciliaris often stands in the same relation to ametropia. The principal text-books do not give any prominence to the subject either in the discussion of blepharitis or ametropia. Most, if not all of them, are silent upon the subject. Donders does not, I think, even allude to blepharitis as one of the results of uncorrected strain of the accommodation. In the chapter on Blepharitis in Saemesch's *Hand-Buch*, by Professor Michel, the subject is not mentioned. Schweigger in his hand-book is also silent upon the point. The same may be said of the treatises of Weeker, Stellwag, and Soelberg Wells. I mention these facts because in speaking of the causal connection of blepharitis with ametropia to some of my professional friends, I found them under the impression that the subject had already been distinctly enough mentioned in the text-books. However much may have been known and said upon the subject in the practice of eye infirmaries, very little has as yet found its way into the literature of ophthalmology.

I therefore present a few statistics as to the connection between diseases of the hair follicles and tarsal glands and the various forms of ametropia. They are all the cases observed by me in private practice during the last eighteen months. I have attempted to keep a similar record in the Manhattan Eye and Ear Hospital, but there are some omissions in these statistics

¹ Read before the International Congress of Ophthalmology, September, 1876.

—that is, the refraction has not been determined in all the cases; I have therefore, not placed them among my private cases. I will say, however that, so far as they go, in the opinion of the House Surgeon, Dr Cheatham, they confirm the results of my own statistics. My conclusions are as follows:—

I. Ametropia seems to be the condition of most eyes affected with blepharitis ciliaris.

II. When the blepharitis is associated with errors of refraction, the error of the edges of the lids is very much facilitated by and sometimes depends upon correction of the ametropia.

III. Paralysis of the accommodation by the use of atropia will usually, with no other treatment, very much relieve the blepharitis that is associated with ametropia.

IV. Patients suffering from blepharitis associated with ametropia will often ignore any other affection of the eyes than that of the edge of the lids, and deny that they suffer from asthenopia or conjunctivitis, complaining only of the discomfort and disfigurement produced by the disease—and this when the error of refraction is so marked that we would naturally expect quite serious consequences from its non-correction.

V. The form of blepharitis to which my statistics refer is not a mere irritation of the eyelids, such as often accompanies a catarrhal conjunctivitis, but a true hypersecretion of the hair follicles and tarsal glands, attended by the formation of crusts, ulcerated points, and hyperæmia.

VI. Hypermetropia is the error of refraction most frequently associated with blepharitis ciliaris.

I frankly admit that the number of cases I am now able to present does not absolutely prove that blepharitis ciliaris is very frequently caused by ametropia, although I cannot escape the conviction that this is the case. The number is large enough, however, to show a remarkable coincidence at least, and to stimulate others to inquiry in the same direction.

CASE I. Mr. R., æt. 17. Complains of blepharitis, which he has had three or four years. Sometimes has had slight pain in eyes after reading. Accommodation and muscles normal. Refraction, emmetropic. $V = 1$.

CASE II. Mr. D., æt. 26. Has had blepharitis and asthenopia for past three years; complains chiefly of the blepharitis. Has derived no benefit from treatment, which has been from competent surgeons, who have not attempted to prescribe glasses. Refraction, mixed astigmatism, both eyes. Under atropia—

$$\begin{array}{l} \text{R. E. with } +\frac{1}{2}^{\circ} \text{ } \left[-\frac{1}{2}^{\circ} V = \frac{2}{3}^{\circ} \right. \\ \text{L. E. " } +\frac{1}{2}^{\circ} \left. \left[-\frac{1}{3}^{\circ} V = \frac{2}{3}^{\circ} \right. \right] \end{array}$$

Ordered above glasses; also cleansing of lids with a solution of bicarbonate of soda in water, and the application of red oxide of mercury ointment. Patient reports six months later: Uses eyes with comfort, and has scarcely any blepharitis. Says that redness of the lids returns whenever he leaves off his glasses for a few days. Four months later the lids are entirely well.

CASE III. Miss A., æt. 18. Has had asthenopia and blepharitis since childhood. Accommodation and muscles normal. Refraction, compound hypermetropic astigmatism, both eyes. Under atropia—

$$\begin{aligned} \text{R. E. } V &= \frac{2}{3} \text{ with } +\frac{1}{36} \text{ } \bigcirc +\frac{1}{36} \text{ } V = \frac{2}{3}. \\ \text{L. E. } V &= \frac{2}{3} \text{ with } +\frac{1}{36} \text{ } \bigcirc +\frac{1}{36} \text{ } V = \frac{2}{3}. \end{aligned}$$

This patient was freed from the blepharitis, etc., by the glasses.

CASE IV. Miss U., æt. 15. Complains only of blepharitis. Refraction, hypermetropic $\frac{1}{36}$ with each eye. Result of treatment unknown.

CASE V. Mrs. F., æt. 28. Complains of blurring of distant vision, of fatigue in eyes after use, and of blepharitis. Accommodation and muscles normal. Myopia, $\frac{1}{2}$ right eye, $\frac{1}{2}$ left eye; ordered $\frac{1}{2}$ for both eyes. Four months later reports herself entirely well.

CASE VI. Mr. D., æt. 23. Has had blepharitis and styes for past two years. Some asthenopia for past six months. A. normal. $V=1$. Insufficiency interni, 6° at $12''$, and 4° at $15'$. Refraction, emmetropic. No record of treatment or course.

CASE VII. Mr. V., æt. 28. Complains of blepharitis. $V=1$. Refraction, H. $\frac{1}{36}$, both eyes. After declining glasses for a year nearly, with constant relapses, is now wearing $\frac{1}{36}$ with evident progress in the cure of the blepharitis.

CASE VIII. Mr. W., æt. 28. Blepharitis and asthenopia past two years. A. normal. Refraction, compound myopic astigmatism, both eyes—

$$\begin{aligned} \text{R. E. with } -\frac{1}{36} \text{ } \bigcirc -\frac{1}{36} \text{ } V &= \frac{2}{3}. \\ \text{L. E. with } -\frac{1}{36} \text{ } \bigcirc -\frac{1}{36} \text{ } V &= \frac{2}{3}. \end{aligned}$$

Ordered these glasses. Patient not heard from since.

CASE IX. Mr. D., æt. 28. Complains of blepharitis; has had it four or five years. Refraction, H. $\frac{1}{36}$, both eyes. $V=1$.

CASE X. Mr. J., æt. 36. Complains of blepharitis, which he has had for several years. A. and muscles normal. Refraction, simple myopic astigmatism $\frac{1}{36}$, both eyes.

CASE XI. Mr. B., æt. 28. Complains of "gritty" sensations about eyes, and blepharitis. Refraction, H. $\frac{1}{36}$, both eyes. $V=1$. One month after, this patient was greatly relieved of his symptoms.

CASE XII. Mr. A., æt. 23. Complains of indistinct vision and of blepharitis. Refraction, simple hypermetropic astigmatism $\frac{1}{36}$, each eye. $V=\frac{2}{3}$. This patient is relieved by the treatment, but a complete cure has not been effected.

CASE XIII. Miss C., æt. 15. Complains of blepharitis. Refraction, hypermetropic, both eyes. Declines to wear glasses.

CASE XIV. Master U., æt. 10. Complains of blepharitis and asthenopia. Refraction, H. $\frac{1}{8}$, each eye. R. E. $V=\frac{2}{3}$. L. E. $V=\frac{2}{3}$. The glasses cause some improvement, but the patient was seen but twice or three times after they were prescribed.

CASE XV. Miss C., æt. 16. Blepharitis since a small child. Treated without success for a year at an eye institution.

$$\begin{aligned} \text{Refraction, R. E. H. } \frac{1}{6} \text{ } V &= \frac{2}{3} +. \\ \text{L. E. H. } \frac{1}{36} \text{ } V &= \frac{2}{3} +. \end{aligned}$$

This patient was very much improved, as to the blepharitis, under the use of atropia, in connection with the same treatment that had been previously employed. She passed from observation before she was *entirely* well.

Corneal opacities prevented better result from the correction of the hypermetropia, and the glasses had not been ordered when last seen.

CASE XVI. Mr. T., æt. 35. Complains of blepharitis, which he has had since 1858; also of asthenopia. A. normal.

Refraction, R. E. M. $\frac{1}{36}$ $V=1$.

L. E. M. $\frac{1}{24}$ $V=1$.

Insufficiency of recti interni, 7° at $12''$. This patient was seen once after glasses were ordered, and was then improved. He had had the usual local treatment for years.

CASE XVII. Mr. A., æt. 24. Complains of having had blepharitis for past three years; asthenopia for same period. A. normal. Refraction, M. $\frac{1}{48}$, both eyes. $V=1$. Insufficiency interni recti, 5° at $12''$. The patient went to Europe before the benefit from glasses could be tested.

CASE XVIII. Mrs. L., æt. 32. Has had asthenopia, slight blepharitis, and muscæ for some time. Unable to do any fine work for past two months. A. and muscles normal. $V=1$. Refraction, emmetropic. This patient is suffering from mental worry, and the eyes but index the whole nervous system. The refraction was tested under atropia.

CASE XIX. Mrs. B., æt. 44. Complains of blepharitis. Refraction, emmetropic, $V=1$. Presbyopia, $\frac{1}{36}$.

CASE XX. Mr. B. complains of blepharitis. A. and muscles normal. Refraction very slightly hypermetropic by ophthalmoscope; not tested with atropia. $V=1$. No note of a second visit.

CASE XXI. Miss L., æt. 21. Complains only of blepharitis, which she has had over a year. Refraction, mixed astigmatism, both eyes—

R. E. with — $\frac{1}{16}^\circ$ $+ \frac{1}{4}^\circ V = \frac{2}{30} —$.

L. E. with — $\frac{1}{16}^\circ$ $+ \frac{1}{4}^\circ V = \frac{2}{30} —$.

This patient's blepharitis was considerably improved by the use of atropia for two or three weeks, while the refraction was being tested. There were also evidences of old iritis in her case. She passed from observation almost immediately after the refraction was determined.

CASE XXII. Mary P., æt. 5. Her mother states that she has had blepharitis for the past eighteen months, and she now has a marked affection of her lids. The refraction is hypermetropic in both eyes $\frac{1}{4}$. On account of the youth of this patient, none but local treatment was advised until she should begin to study.

CASE XXIII. Mr. R., æt. 21. Has had asthenopia and blepharitis of the left eye for the past eighteen months. Blepharitis in right eye for the past three months. A. and muscles normal. Refraction, H. $\frac{1}{36}$, both eyes. $V=1$. Ordered $+\frac{1}{48}$.

CASE XXIV. Master E., æt. $12\frac{1}{2}$. Complains of having pains in his eyes occasionally, and of blepharitis.

Refraction, M. $\frac{1}{48}$, L. E.

M. $\frac{1}{6}$, R. E.

Chloroiditis.

CASE XXV. Master F., æt. 6. Has had blepharitis for several months. Refraction, emmetropic by ophthalmoscope. Atropia not used. Local treatment advised.

CASE XXVI. Mr. M., æt. 21. Blepharitis for the past year. Has had a good deal of treatment, but without benefit. A. normal. Insufficiency of internal recti, 4° at $12''$. Refraction, M. $\frac{1}{48}$, both eyes.

CASE XXVII. Miss M., æt. 13. Has had blepharitis since a small child. Has been treated frequently, but never permanently cured. Some

asthenopia after prolonged use of eyes. Refraction, H. $\frac{1}{30}$, both eyes. $V = 1$.

CASE XXVIII. Miss S., *et* 25. Has had blepharitis and asthenopia for five years. A. and muscles normal. Refraction, compound hypermetropic astigmatism, both eyes—

$$\text{R. E. with } +\frac{1}{20} \subset +\frac{1}{40} \text{ axis } 90^{\circ} V = \frac{20}{60}.$$

$$\text{L. E. " } +\frac{1}{20} \subset +\frac{1}{40} \text{ axis } 90^{\circ} V = \frac{20}{60}.$$

Ordered the above glasses. No local treatment for lids. Patient reports four months later that asthenopia is entirely relieved, and that the blepharitis has disappeared.

CASE XXIX. Mr. C., *et* 20. Asthenopia for two years. Quite severe blepharitis for the same period. Refraction, compound hypermetropic astigmatism, both eyes. Under atropia—

$$\text{R. E. } +\frac{1}{40} \subset +\frac{1}{40} \text{ axis } 90^{\circ} V = \frac{20}{60} +.$$

$$\text{L. E. } +\frac{1}{40} \subset +\frac{1}{40} \text{ axis } 90^{\circ} V = \frac{20}{60}.$$

CASE XXX. Mr. C., *et* 39. Complaints of blepharitis. Has had slight asthenopia in the evening, but he is only annoyed by the redness of his lids. Refraction, slightly hypermetropic in both eyes by ophthalmoscope. $A = \frac{1}{40}$. Ordered $+\frac{1}{40}$ for reading. No other treatment. One month later the lids looked better, but not entirely well.

CASE XXXI. Master U., *et* 12. Has had blepharitis for the past four years. He has been treated by the usual remedies, but never cured. Has asthenopia and a mild form of palpebral conjunctivitis. Refraction, H. $\frac{1}{60}$, each eye, under atropia.

Summary.—Whole number of cases reported, 31.

Complained of blepharitis alone, 15, or about 50 per cent.

Complained of blepharitis and asthenopia, 16.

Cases having refractive error, 26, or 83 $\frac{9}{10}$ per cent. nearly.

Cases, emmetropic, 5, or about 16 $\frac{1}{6}$ per cent.

Hypermetropia	.	.	.	.	.	.	.	13
Myopia	.	.	.	.	.	.	.	5
Hypermetropic astigmatism	.	.	.	.	.	.	.	1
Myopic astigmatism	.	.	.	.	.	.	.	1
Compound hypermetropic astigmatism	.	.	.	.	.	.	.	3
“ myopic astigmatism	.	.	.	.	.	.	.	1
Mixed astigmatism	.	.	.	.	.	.	.	2
Emmetropia	.	.	.	.	.	.	.	5

 31

The refraction in these thirty-one cases was tested under atropia whenever it was allowed. I cannot accept statistics on this subject for myself, that are not made up in this way. For I am led to believe, from some considerable observation, that even experienced and competent observers sometimes declare an eye emmetropic which they have examined with the ophthalmoscope, without atropia, when the use of the mydriatic will show hypermetropia of more than a sixtieth. If every one of my cases had been tested under atropia, the percentage of hypermetropia would perhaps have been increased.

ART. XII.—*Pulsating Tumour of Orbit resembling true Aneurism; Ligation of Common Carotid; subsequent Removal of Tumour; Recovery.* By G. E. FROTHINGHAM, M.D., Professor of Ophthalmology, University of Michigan. (With two wood-cuts.)

IN March, 1872, I was called to see Mrs. J. B., æt. 35 years, residing in Chelsea, Michigan, and suffering from exophthalmia of left eye. The history of the case was briefly as follows: Three years before I was called, she had noticed a slight protrusion of the eye. As it was not attended with any pain or serious discomfort at first, she did not consult a physician. The prominence of the eye gradually becoming more marked, she consulted at different times several surgeons, but did not remember what diagnosis was made by any of them. At the time I saw her the eye was very much protruded, and moved perceptibly with each pulsation. Upon applying the ear over the temple or eye, a loud bruit, just such as is heard in aneurism, was detected; and with a stethoscope the bruit was all the more distinct and characteristic. Upon compressing the common carotid the bruit ceased, and the eye could be made to recede in the socket, but not to its normal position. Upon pressing the finger in at the outer angle of the orbit, at a point where the tumour showed slightly, it could be felt as a soft, elastic, pulsating tumour, just like a true aneurism with a thin sac.

There was no dilatation of the pupil. The sight in the protruding eye, though much diminished, was sufficient to distinguish readily the features of persons several feet distant, when the lid was raised so as to uncover the pupil. In the usual position the cornea was completely covered by the upper lid, which was much thinned, and overlapped the eye. After a careful examination I diagnosed true aneurism of the orbit, although the insidious approach and slow growth of the tumour pointed to aneurism by anastomosis, or some form of pulsating tumour.

Later in the month she was examined by Prof. T. A. McGraw, then occupying the chair of surgery in this University. After a thorough examination he also diagnosed true aneurism.

After having tried compression without success, I advised ligation of the common carotid. The patient at first objected, but after a few weeks, the tumour increasing rapidly, and great discomfort being experienced from the noise in the head, she consented to the operation, which I performed on the 29th of May, 1872, assisted by Dr. F. K. Owen, of Ypsilanti, and Drs. Gates and Ackley, of Chelsea.

The effect of the operation was immediate cessation of the bruit and pulsation in the tumour, which diminished considerably in size, the eye receding to a corresponding extent. The pulsation ceased for fourteen days. It then began to return, but not with any considerable force, and not to the extent of producing any noise or uncomfortable sensation that disturbed the patient.

The ligature came away on the eighteenth day, and the patient recovered slowly from the effect of the operation, suffering from giddiness and other cerebral symptoms for several weeks afterward.

Although the pulsation returned in the tumour, the ligation of the artery had the effect of retarding its growth, so that the symptoms did not

again become urgent until the latter part of August, 1875. The patient visited me several times in the interval between the ligation of the artery and the date above mentioned, and was examined in my presence by several surgeons, all of whom declared the pulsation and bruit to be like that of true aneurism. Among those who thus examined the patient was my colleague, Prof. Maclean, who, as a private pupil of the late Prof. Syme, had early been made familiar with all forms of aneurism, and whose practice since his graduation, chiefly surgical, had kept his ear trained to the keenest distinctions.

The exophthalmia increasing quite rapidly, the patient again consulted me in the latter part of September, 1875, and, upon examination, I found

Fig. 1.



that the tumour had considerably increased, the eye presenting the appearance shown in Fig. 1, copied from a photograph taken at that time. The tumour had now projected so far beyond the lower margin of the orbit that it could be more thoroughly examined, and, although it was very elastic, and became greatly reduced in size by pressure, I became satisfied that it was not a true aneurism, but one of those vascular tumours commonly known as "aneurism by anastomosis."

The eyeball was almost completely covered by the upper lid, which was much thinned and expanded, so as to cover the eye like a hood; whenever it was raised it had to be held forward, or it would slide completely back and leave the whole eyeball

uncovered. The vision in the eye was sufficient to enable the patient to count fingers at about six feet distance.

I advised at this time the removal of the tumour, feeling confident that it could be safely performed. The patient, feeling very anxious to be relieved, readily consented; but as the weather then was very warm, desired to postpone the operation until it was cooler. To this I consented, and the patient left for home. For some reason she did not again return till November. The tumour had not materially changed in appearance from that presented at the examination in September. On the 3d of November, assisted by my colleagues, Profs. Maclean and Herdman, I proceeded to perform the operation, having made preparation for any modification that might be called for by the condition of the tumour, that might be ascertained after a more thorough exploration, which could be made after enucleation of the eyeball.

The patient having been chloroformed, an exploring trocar and cannula was plugged into the tumour; and upon withdrawing the trocar the blood flowed in regular jets in a stream the full size of the cannula. The eye was now enucleated, and, on pressing the finger well back, the posterior portion of the tumour could be felt. It was thus ascertained that the tumour lay wholly within the orbit, and was fed by large vessels entering through the sphenomaxillary fissure, which was so much enlarged that the finger

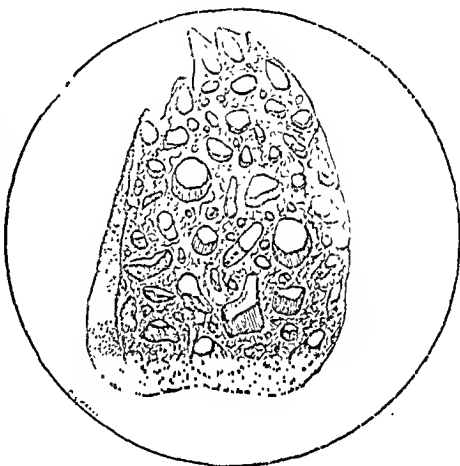
could be readily passed into it, and by thus exercising pressure on the vessels all pulsation in the tumour could be stopped.

The tumour was now rapidly enucleated, the pedicle cut with the curved scissors, an assistant being ready to compress the vessels at once. The hemorrhage, as expected, was very profuse, filling the orbital cavity and flowing in a large stream down the cheek in the brief time required for the assistant to pass his finger into the fissure and compress the vessels. A compress moistened with a solution of Monsel's styptic was now pressed down upon the bleeding vessels, the orbit tamponed, and the patient placed in bed. Some fever and headache followed the operation, but the recovery was rapid, the patient returning home on the 17th of November, and soon the recovery was complete.

The tumour, upon examination, was found to consist of two portions. There was a more dense portion and on the inner and upper side a large mass of convoluted and sacculated vessels, held together by connective tissue, and loosely connected by the same tissue to the more solid portion of the tumour.

This more solid portion differed from the other simply in having a greater quantity of connective tissue, which was also more dense in its character. It was permeated freely by bloodvessels, and in structure appeared much like a sponge. A thick slice allowed the light to shine through, revealing cavities of irregular form and size, with which the bloodvessels freely communicated. A careful microscopic examination showed it to be composed of bloodvessels and condensed connective tissue. Fig. 2 represents the appearance presented by a section of the tumour, made after eight months, the tumour being much shrunken by the action of the alcohol in which it was preserved.

Fig. 2.



This case is of interest as illustrating the difficulty attending the diagnosis between aneurism and other pulsating tumours situated in the cavity of the orbit.

This was, perhaps, more strikingly illustrated by the case in which Bowman ligated the common carotid for a supposed aneurism of the orbit, but which proved to be neither an aneurism nor vascular tumour of any kind. In his case the diagnosis of aneurism was concurred in by several eminent and experienced medical gentlemen, no one doubting the existence of aneurism. But the patient dying from the effect of the ligation, a post-mortem showed that no aneurism existed anywhere in the cranium or orbit, nor was there any vascular disease within the orbit. The only condition that could be found to explain the exophthalmia, bruit, and pulsation, was inflammation of the cavernous sinus and occlusion of the ophthalmic vein where it entered that sinus. The swollen walls of the sinuss, by partially

compressing the internal carotid, probably gave rise to the bruit, and the occlusion of the vein, by preventing the free return of venous blood, probably gave rise to the pulsation of the eyeball, and its protrusion from the orbit.

Perhaps the tendency at the present is too strongly inclined to regard *all* deep-seated pulsating tumours of the orbit as true aneurism, and I report this case chiefly to add to the statistics of this class of tumours, for I am fully convinced that, until a more thorough and extensive study of the subject shall develop more accurate diagnostic distinctions than are at present known, mistakes in diagnosing these tumours must occasionally happen.

ART. XIII.—*On a Modified Mode of detecting Paralysis of the Ocular Muscles.* By H. CULBERTSON, M.D., Professor of Ophthalmology in the Columbus Medical College, Ohio.

IN considering this subject, one of the sources of confusion is the necessity of describing the position of the false images and of the meridians for *each eye*. This we would avoid by adopting a uniform method of investigation for *either eye*, and which is as follows:—

A diagram like that below, Fig. 1, is drawn on card-board, which should be about 21 inches square and perforated with an opening in the centre, half an inch in diameter.

Fig. 1.

	Superior	Region.	
Temporo- superior quadrant.		Naso- superior quadrant.	
Temporo- inferior quadrant.		Naso- inferior quadrant.	
	Inferior	Region.	

This diagram is intended to be viewed when inspecting the *left eye*.

When examining the *right eye* the lateral regions will be reversed.

(See Fig. 2.)

These diagrams may be made on opposite sides of the same card-board,

and the side employed which corresponds to the right or left eye when the patient is placed in front of the figure for examination.

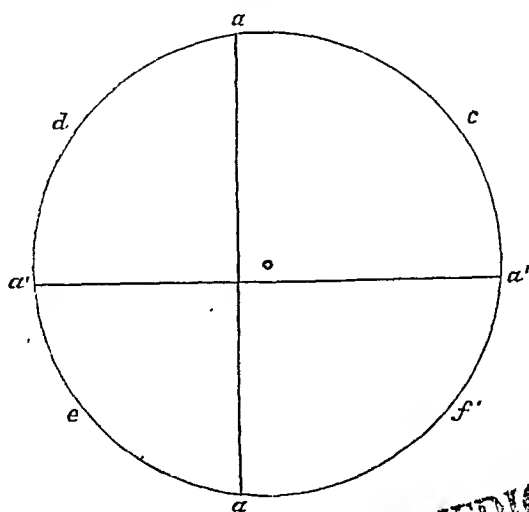
Fig. 2.

Superior Region.	
Naso- superior quadrant.	Temporo- superior quadrant.
Naso- inferior quadrant.	Temporo- inferior quadrant.
Inferior Region.	

The diagram intended for the *right* or *left* eye should be placed in front of a lamp, its centre on a level with the eye, before the patient, and usually three or four feet from the party to be inspected. It may be necessary to change the antero-posterior axis of the eyeball, by inclining or turning the head, to discover the false image in paralysis of some of the muscles of the eye.

The eyeballs examined are also, in imagination, divided into the same *regions* and *quadrants*, represented on the card-board, Figs. 1 and 2; and these *regions* and *quadrants* are supposed to move with the eyeballs. Thus Fig. 3 is a front view of these divisions. The section above the

Fig. 3.



horizontal plane is the *superior region*, and that below this the *inferior region* for either eye; that to the left of the vertical plane *a a*, for the left eye, the *temporal region*, and that to the right of *a a* (for the same eye) the *nasal region*; *d*, represents (left eye) the *temporo-superior quadrant*; *e*, the *temporo-inferior quadrant*; *c*, the *naso-superior quadrant*; and *f*, the *naso-inferior quadrant*.

The divisions for the *right eye* will be as follows: that to the left of *a a* the *nasal region*, and that to the right of *a a* the *temporal region*; *d*, represents the *naso-superior quadrant*; *e*, the *naso-inferior quadrant*; *c*, the *temporo-superior quadrant*; and *f*, the *temporo-inferior quadrant*.

The vertical plane in either eye is supposed to fall within the apex of the cornea anteriorly, and to pass through the macula lutea posteriorly. The horizontal plane is imagined to run below the apex of the cornea in

Fig. 4.

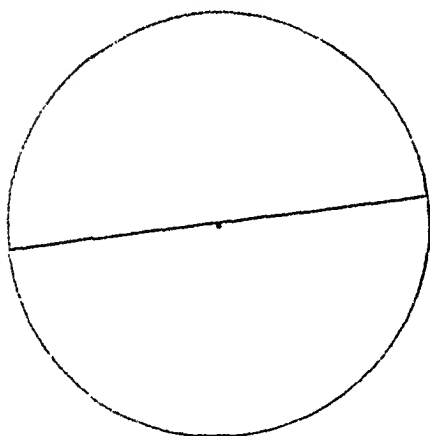
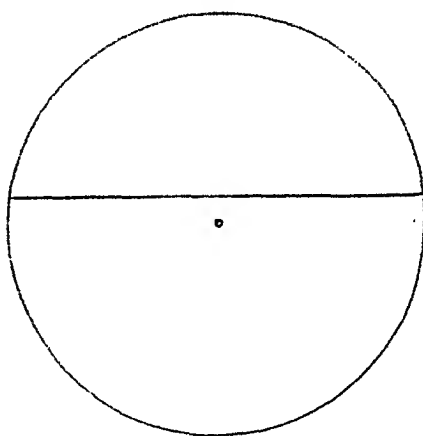


Fig. 5.



front, and to intersect the macula lutea behind. Fig. 4 represents a lateral, and Fig. 5 a posterior, view of the horizontal plane.

After having determined which is the eye affected, the proper diagram is placed in front of the corresponding eye, and the investigation proceeded with.

To determine the Eye Affected.—The patient in front of the card-board, Fig. 1, will see two images of the central perforation. Suppose the marginal (the least distinct) or false image¹ be seen in the *temporo-superior quadrant*. If a prism of the proper degree of refraction be placed with its base over the false image, and its axis parallel to a right

¹ The most certain mode of determining which is the false image is to place a pointer in the hand of the patient. On pointing to the position of the false image, the pointer will not pass through the card-board, but, on directing it upon the central image, the pointer will pass through the central perforation of the card-board.

line intersecting the true and false images, the two images will be united. But if the prism be carried before the opposite eye, its base and axis in the same direction as above (the several *regions* depicted in Fig. 1 being transported, in imagination, with the prism), the images will be further separated. Hence we may conclude *that* eye affected before which the prism is placed, the base over the false image and its axis parallel with a right line drawn through the true and false image, and which, thus placed, fuses these images; and that, if the prism be thus placed before the sound eye, the images will be separated.¹

The reason for this is as follows: We know by experiment that the central is the *true* and most distinct image; and that the *false* image is in the *region* or *quadrant* in which is found the paralyzed muscle; and, further, to correct this, the base of the prism must be placed in the *region* or *quadrant* in which is located the paralyzed muscle. When so placed the glass, if of proper refracting power, will effect fusion of the images in the *diseased*, but not in the *sound*, eye; in which latter it will only prevent a normal state, or separate the images.

Paralysis of Individual Nerves or Muscles.—In the plan herein proposed it should be remembered that sometimes the *regions* and *quadrants* will be so largely displaced as to falsify this method of investigation. But, as it is evident the same difficulty would obtain by any method of detecting ocular paralysis, no greater objection can be had against this plan than to those heretofore proposed.

Paralysis of the Third Nerve.—The apex of the cornea is drawn slightly into the *temporo-inferior quadrant* by the external rectus and the superior oblique muscles. In the complete form of this paralysis, the muscles paralyzed are the levator palpebrarum, the internal, the superior, and the inferior recti; and the inferior oblique, the ciliary, and the sphincter pupillæ muscles.

The rays of light impress the retina in the *temporo-inferior quadrant*. The false image will be seen in the *naso-superior quadrant*; by virtue of the law of inversion of retinal images, and also that the angle of reflection is equal to that of incidence, the media being the same; or in the *region* of the eyeball, in which is found the greatest number of paralyzed muscles. The eye lags when moved towards the *superior*, the *inferior*; and the *nasal regions*.

¹ In determining which is the affected eye, it is essential that the base of the prism be not reversed in the horizontal or vertical meridians. For it is evident that this would destroy the value of the test. For instance, suppose the false image is seen to the left of the vertical line, *i. e.*, in the *temporal region*, and when the prism is placed base in the *temporal region*, axis horizontal, the images are fused. But if the base be now placed (in front of the right eye) towards the *right temporal region*, axis horizontal, the images will be united. This, however, violates the rule, the base being carried towards the true image. The plan requires that the base of the prism should always be towards the *false* image.

In making the true and false image, the prism should be placed with its base over the false image, and its axis parallel with a line drawn through the true and false image, and the base in the *naso-superior quadrant*; or the base in the *region* of greatest paralysis.

Paralysis of the Internal Rectus.—Here the apex of the cornea is drawn into the *temporal region*, in the horizontal meridian, by the external rectus muscle. As the only muscle paralyzed is the internal rectus, there is no inclination of the vertical meridian. The rays of light enter the eye in the *nasal region*, in the horizontal meridian, and the retina is impressed in the same meridian in the *temporal region*; and hence the false image will appear in the *nasal region*, or in the *same region* in which is found the paralyzed muscle. The eye will lag when the wand is moved towards the *nasal region*, or that in which is found the paralyzed muscle.

The prism should be placed (in fusing the images) with its base in the *nasal region*, its axis corresponding with the horizontal meridian.

Paralysis of the External Rectus.—Paralysis of this muscle causes the internal rectus to turn the corneal apex into the *nasal region*, in the horizontal meridian; and the rays of light will reach the retina in the *nasal region*, in the horizontal meridian. Hence the false image will be seen in the horizontal meridian and in the *temporal region*, or in the *region* in which is found the paralyzed muscle.

As the movement of the eyeball is in the plane of the controlling muscle, the internal rectus, the false image will not be inclined. The eye will lag when moving the object towards the *temporal region*, or in the direction of the paralyzed muscle. The prism should be placed base in the *temporal region*, and axis horizontal.

Paralysis of the Superior Rectus.—Paralysis of this muscle enables the action of the inferior rectus and of the inferior oblique muscles to turn the apex of the cornea into the *inferior region*, and slightly into the *temporo-inferior quadrant*. The retina will be impressed in the *temporo-inferior quadrant*, and, therefore, the false image will be projected in the *naso-superior quadrant*, a little above the horizontal and near the vertical meridian, or towards the *region* of the eye in which is found the paralyzed muscle—*i. e.*—*superior region*. The eyeball will lag when an object is moved towards the *naso-superior quadrant*, or towards the *region* in which is found the paralyzed muscle. The prism should be placed base in the *naso-superior quadrant*, near the vertical meridian.

Paralysis of the Inferior Rectus.—Paralysis of this muscle enables the superior rectus to roll the apex of the cornea into the *naso-superior quadrant*, thus causing the rays of light to impinge on the retina in the *naso-superior quadrant*. Hence the false image will be projected in the *temporo-inferior quadrant* near the vertical meridian: or in the *region* in which is found the paralyzed muscle. The eye will lag when the object is moved towards the *temporo-inferior quadrant*, or the *region* paralyzed.

The prism should be placed, base in the *temporo-inferior quadrant*, near the vertical meridian.

Paralysis of the Superior Oblique.—By paralysis of this muscle and the action of the inferior oblique, the apex of the cornea is turned into the *naso-superior quadrant*. Hence the rays of light will impress the retina in the *naso-superior quadrant*, and the false image will be seen in the *temporo-inferior quadrant*. But the inferior rectus inclines the vertical meridian above into the *temporo-superior quadrant*, and thus the retina would be impressed still further outwards in the *naso-superior quadrant*; hence the false image will be projected further inwards in the *temporo-inferior quadrant*: or in the *region*, in which is found the paralyzed muscle.

The eyeball will lag towards the *naso-inferior quadrant*, and the prism should be placed with the base in the *temporo-inferior quadrant*.

Paralysis of the Inferior Oblique.—By paralysis of this muscle and the action of the superior oblique, the apex of the cornea is turned into the *naso-inferior quadrant*. Hence the rays of light will impress the retina in the *naso-inferior quadrant*, and the false image will be seen in the *temporo-inferior quadrant*. But the superior rectus inclines the vertical meridian above into the *naso-superior quadrant*, and thus the retina would be impressed still further inwards in the *naso-inferior quadrant*; hence the false image will be seen still further outwards in the *temporo-superior quadrant*; or in the *region* in which is found the insertion of the paralyzed muscle. The eyeball will lag towards the *naso-superior quadrant*, and the prism should be placed base in the *temporo-superior quadrant*.

Conclusions.—1st. That in paralysis of the ocular muscles, the apex of the cornea will be carried towards the *region* in which is found the controlling muscle.

2d. That in moving an object before it, the eye will lag towards the *region* in which is found the paralyzed muscle.

3d. That if the movement of rotation is strictly within the plane of the controlling muscle, no effect will be had upon the inclination of the false image.

4th. If the movement of rotation is not within the plane of the controlling muscle, the false image will be inclined.

5th. The *false* image will seem to be located in the *region* in which is found the paralyzed muscle.

6th. That in the treatment of the disease by prisms, the base of the latter should be placed in the *region* in which is located the paralyzed muscle, and its axis parallel with a line drawn through the false and true image.

7th. To induce the same effect, artificially upon the rays of light, as produced by paralysis of the ocular muscles, the apex of the prism should be placed over the muscle assumed to be paralyzed.

8th. Although in paralysis of the superior and inferior recti, the false images are seen in the *quadrants*, yet they are located so near the vertical line or plane, that practically they may be regarded as situated in that plane, and in the *superior* and *inferior regions*. Hence in general terms, it may be stated, that in paralysis of the recti, the false image will be seen in the *regions*, and in the vertical or horizontal meridians; while in paralysis of the oblique and of the third nerve, the false image will be located in the *quadrants*.

Illustrative Cases.—CASE I. J. B., æt. 47. Primary position in front of card-board for left eye. He sees the false image in the vertical meridian in the *superior region*. The prism placed in front of the left eye base in *superior region* and axis corresponding with a right line drawn through the true and false images, unites these images, but placed before the right eye in the same position as before the left, separates the images.

The wand moved a little below the horizontal meridian develops two vertical images, the false one above and to the right (this) or in the *nasal-superior quadrant*. Moved into the *nasal region*, the images become plainer and a very little further apart. Moved into the *temporal region*, the images quickly unite. Moved above or below, the images are quickly fused. There is no ptosis, the pupil is active, and accommodation is normal.

Diagnosis.—Paralysis of the third nerve, the superior rectus most affected, the internal rectus next most impaired. Originally all the branches of this nerve were paralyzed, but improvement has resulted, and renders the diagnosis less distinct. Even now there is limited impairment of the inferior rectus.

Remark.—This man has hemiplegia of the right side, from which he has recovered partially.

CASE II. J. T.; adult; equivalent to paralysis of the left internal rectus. He has an ulcer upon the apex of the left cornea, which causes the left eye to turn outwards, that the inner clear portion of the cornea may transmit light. This induces diplopia.

In front of the card-board for the left eye he detects the false image in the *nasal region* and in the horizontal meridian. The light impresses the retina in the *temporal region*, and hence the false image seems to be in the *nasal region*, or in the *region* in which is found the muscle (internal rectus), the action of which is affected as though defective in its operation, but is not paralyzed.

When the wand is carried before him into the extreme *temporal region*, he sees two erect images on the same level. He sees the same in the same positions in front of him, but nearer together. When the wand is carried into the *nasal region*, the images are easily fused.

A prism of 10° placed in front of the left eye, its base in the *nasal region* and over the false image and in the horizontal meridian, unites the images; but when the prism is carried before the right eye, its base and axis in the same direction, the images are separated.

Remark.—This man's eyes were under the influence of atropia when examined.

CASE III. Miss E. H., æt. 16. On bringing finger close to her eyes in the horizontal meridian, the apex of the right cornea turns outwards, or

into the *temporal region* of the card-board for the right eye. On placing the base of the prism 3° over the false image, and in front of the right eye, the base in the *nasal region*, and its axis in the horizontal meridian, the images are fused, but before the left eye they are more widely separated when the prism is placed before that eye, its base and axis unchanged in direction.

In this investigation the patient was necessarily placed within about four inches of a small card-board with only a dark central spot and a horizontal and vertical line upon it, in discovering the diplopia.

The light impressed the retina in the *temporal region*, and hence the false image will be seen in the *nasal region*, or in the region in which is found the relaxed muscle.

Diagnosis.—A case of insufficiency of the right internal rectus—muscular asthenopia.

Remarks.—Her general health is impaired and catamenia deranged. She has amenorrhœa.

CASE IV. A male adult, æt. 25. On holding the finger close to his eyes, the patient sees two images on the card-board for the left eye. The false one in the *nasal region*, horizontal meridian. The base of the prism placed over the false image in the *nasal region* in front of the *left* eye unites them, but in front of the *right* eye it separates them.

Diagnosis.—Asthenopia and myopia with insufficiency of the left internal rectus.

Treatment.—Gave 24'' — glasses for distance and near vision, with which he read No. 1 Galezowski at 12''.

Remark.—This man has a *very* prominent nose and *quite* full eye.

CASE V. H. J., æt. 29, a male. The history of the case revealed that some months previously he received a blow upon the right temple. With the card-board for the right eye in front of the right eye, he detects the false image in the *temporal region* in the horizontal meridian. A prism of 9° placed in front of the right eye, base in the *temporal region*, and axis horizontal, fuses the images; but placed in front of the left eye, base, and axis in the same direction, separates them. The eye lags when the wand is moved into the *temporal region*. Secondary deviation of left eye greater than the primary. No diplopia to the *nasal* side of the vertical meridian.

Diagnosis.—Paralysis of the right external rectus from rheumatism.

Treatment.—Prism 9° , applied as above over right eye, and gave pot. iodidi $\mathfrak{z}\mathfrak{j}$; vini coelestis $\mathfrak{z}\mathfrak{ss}$; tr. guaiac. $\mathfrak{z}\mathfrak{i}\mathfrak{ss}$; fl. ext. nucis vomicæ $\mathfrak{z}\mathfrak{ss}$. M. Teaspoonful after meals. Result, recovered.

CASE VI. Miss E. C.—; æt. 19. Card-board for left eye. Sees false image in the *temporal region* horizontal meridian. A prism of 10° placed in front of left eye, base over false image, axis horizontal, fuses images, and in front of right eye axis and base in the same direction, separates them. Eye does not lag in any direction. At the margin of the *superior, inferior, temporal, and nasal regions* the false image disappears, while the true remains. At the usual distance in reading diplopia is not observed. Primary and secondary deviation are equal. Closing left eye the right remains fixed on the object. On closing the right eye the left turns into the *temporal region*, and on opening, then, the right eye, the left turns back into its usual position into the *nasal region*.

Diagnosis.—Concomitant convergent strabismus of the left eye.

Remarks.—Although this is a case of strabismus and not of paralysis, it is included as a part of this subject. It is evident that were the left external rectus divided and its insertion brought forward, normal vision would be restored, and in fact this has been several times successfully accomplished by Dr. VICIUS. See *Revue d'Ophth.*, 1875, p. 339.

CASE VII. A. P. Mulligan, male, aged 11. Cardinal for left eye. False image in *nasal region*, prism placed base in *nasal region*, axis horizontal, in front of *left eye* fuses the images; base and axis in same direction in front right eye separates them. Images are separated when wand is carried towards the *nasal region*, and united when moved into the *temporal region*.

Diagnosis.—Paralysis of the left internal rectus from rheumatic thecitis.

Treatment.—Prism 10° placed base in *nasal region*, axis horizontal; also pot. iodidi, comp. syrup sarsap., and vini colchici.

Result, recovered.

The publication of this method has been delayed in order to gain additional cases for illustration. But as it is thought that others can add these and better test the value of this plan of diagnosis than we, it is believed best to publish now. The plan requires to be thoroughly tested by the many competent to do it in the ophthalmological profession, and if it is found truthful and useful, or erroneous and worthless, we rest satisfied with the result.

ZANESVILLE, OHIO, May, 1875.

ART. XIV.—*Treatment of Fracture of the Femur.* By FERD. BROTHER, M.D., of Banker Hill, Ill. (With a wood-cut)

It is simply our purpose in this article to discuss the indications to be fulfilled, and the best means of obtaining the most favourable results in fracture of the femur.

The matter of greatest importance in treatment of all fractures is, first, "that the result should be a *perfect* limb. Secondly, the greatest comfort to the patient while being treated."

With the testimony almost universal, that lack of perfection of limb is the general result in oblique fractures of the femur, is not the inference natural that none of the methods in general use are adequate to attain the much-desired result? Admitting the truth of this proposition, the question then presenting is, is the fault in the principle of treatment, or its application? I contend that it is in the latter chiefly.

What is the principle involved in the treatment of every fracture? *It is overcoming muscular contraction by continuous extension.* This and nothing more.

By a close study of those cases where lateral supports alone are used to

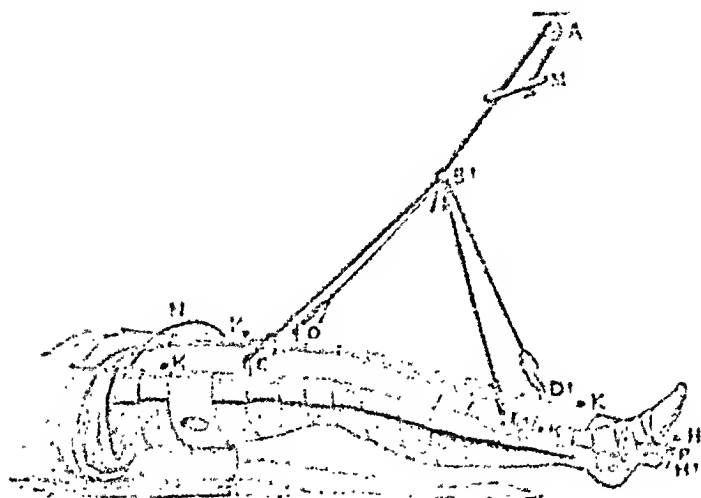
preserve the apposition, this fact is revealed, that the ends of the bone are the prime factors in maintaining extension, if it (extension) is an accomplished fact. Is it accomplished and sustained in oblique fractures of the femur by this means? What is the experience in the use of the lateral splint, of every character, when depended on for extension? After the attempted reduction by more or less, and generally very much manual extension, the supports are carefully and firmly adjusted, the perineal or axillary counter extension arranged, extension from the foot made, and if *manual effort has been continued until immediate contractility has been overcome*, the patient is left in good shape, and the surgeon lays the flattering unction to his soul that he has effected, and will be able to preserve good apposition, and shall have a correspondingly good limb as a result. The next visit reveals the fact that the yielding extending agents, together with the mobility of the points of counter extension, have permitted the oblique ends of the bone to glide past each other, and the limb *is shortened*; dislike to believe it as much as we may, the stubborn fact is there. The extending bands are tightened; and this is done day after day, and time after time, until union has become so firm as to be unyielding. Fortunately experience demonstrates that repeated movement does not prevent bony union, of which the lower animals afford us frequent illustrations. But it is my intention to discuss mechanical principles only—not pathology. The inability to overcome muscular contraction is only one of the objections to the long splint. Experience demonstrates the greater the possibility of overriding of the bone in proportion to the increased amount of soft tissues intervening between the lateral supports; to overcome this tendency increased *compression* is applied. Compression necessarily implies an interrupted circulation, inducing atrophy of the parts, and impeding repair of the injured structures. We may enumerate among other objections the excoriations so universally attending the use of the perineal bands—the compulsory position producing bed-sores—the difficulty in attending to the calls of nature—and the lack of relation of the ends of the bone, if the fracture is in either the upper or lower third. If of the upper third, the psoas and iliacus muscles tilt the upper fragment forward and outward; if of the lower, the gastrocnemii pull the fragment backward.

If it be a fact that continuous extension, *i. e.*, overcoming muscular contraction, is the groundwork of all successful plans of treatment of fractures, the question of vital importance is, how can this extension be best made and maintained?

There is no apparatus with the workings of which I am familiar, possessing as many points of excellence, as few faults, and productive of better results than the wire suspension splint devised by Prof. Jno. T. Hodgen, of St. Louis; and were it better known and understood it could not fail to be appreciated. The apparatus is a combination of the principles of

Smith's anterior, Smith's or Jobert's extension, and the strip bandage support.

It consists (see figure) of a one-fourth inch iron rod of sufficient length to permit its being bent into two parallel arms connected by a cross or



EXPLANATION OF FIGURE.—K, K, K, K, Parallel bars to which the muslin strips are pinned; W, Wire bow; F, F, F, F, Stilling hooks to which cords are attached; A, Adhesive strap and block attached to H, H, cross bar; N, Suspended cord; M, Means of tightening same; P, Pulley in the ceiling. Near the middle of the thigh, a strip is displaced, exhibiting ease of examination or dressing compound fracture.

foot bar. These arms are bent at an oblique angle at the knee, and should reach from the pubes and hip to some six inches beyond the foot, the cross or foot bar should be four or five inches long. For suspension and extension, four small hooks with loops to slip over the bars are necessary, as also a wire bow, eight or ten inches long, with loop at each end to slip on the upper ends of the splint to separate them; with the pulley and cords the apparatus is complete.

Application.—My plan is to have the patient laid obliquely across the bed, with the leg of the injured thigh projecting over the edge. An adhesive strap, four or five inches wide, split so as to avoid the malleoli, is applied on the lateral aspects of the leg to the knee, providing a loop across the foot, into which the usual block is fitted to prevent pressure of the ankle. The roller, having been previously applied to the foot, is now carried smoothly to the knee. A half dozen muslin strips, three or four inches wide, and of sufficient length to encompass the thigh, are passed between it and the bed. The splint, with the wire bow adjusted, is placed in front of the limb, the upper ends thereof at the pubes and hip supported by one assistant; the opposite end of the splint and the foot are steadied by another. The ends of the muslin strips, previously passed, are then pinned to the bars, care being taken to make the tension as uniform as possible; the leg is then supported in the same manner. The adhesive strap and block are

then fastened by a cord to the cross or foot bar, thus attaching the limb firmly to the splint, which is supported until the patient is righted in bed, and is then suspended from the pulley previously so placed in the ceiling that the suspending cord may have an oblique direction, by means of which obliquity extension may be maintained.

To prevent the patient slipping down in bed, and thus lessening the extension, blocks three or four inches thick may be placed under the posts at the foot of the bed, though this is not absolutely necessary, as the patient soon realizes the fact that the lack of extension permits the sharp ends of the bone to impinge the soft tissues, causing pain, as also that his pushing himself up in the bed relieves the difficulty. Thus, by the patient's comfort, we have extension assured.

Having alluded to one of the objections made, I will take up a few others which have been raised. Hamilton, in his last edition of *Fractures and Dislocations*, p. 443, says: "Whatever the advocates of flexion in fractures may say to the contrary, they are never able, in this position, to employ effective extension and counter-extension;" and that "a careful examination of all the double inclined planes, including Smith's and Hodgen's suspending apparatus, will convince any experienced observer that such is the fact;" and "whatever other excellences they may possess, this does not belong to them."

I think, if Prof. Hamilton had taken the trouble to adjust a Hodgen's splint with a spring balance attached between the cross-bar and the foot, he would not have expressed the above opinion.

On the other hand, I have been credibly informed of a surgeon of some repute, who, having been induced to try this apparatus, found he had adjusted it with so *much extension* as to be unendurable.

Educated, as we nearly all have been, "to set" the fracture, it is natural that objection should be made to this appliance on the score that there is no provision made for this manipulation.

Unless profound anæsthesia is produced, it is very seldom that the ends in oblique fracture can be placed in perfect apposition, and *retained* until the retentive apparatus is applied. Nor does the necessity exist for this great amount of pulling; as the fact is well known that a small amount of force continuously applied will overcome muscular contractility, and *retain its control*, which is more than any given amount of force applied for a short time can do.

Another fault found is the freedom of motion, rendering the possibility of displacement greater. The only risk I can see is, that of the patient's sliding down in bed; the suffering entailed, as previously alluded to, warns against an attempted repetition; while the general freedom of motion is an advantage over all other appliances. It is almost impossible to disturb the axis of the limb; so the patient can sit up, move to either side

of the bed, lift himself on the bed-pan, and lie almost on his side, without disturbing the relation of the fracture or causing pain.

The last objection I shall notice is—"it affords inadequate support along the centre of the shaft, in consequence of which the limb is apt to unite with a backward curve or angle." Is there any appliance for treatment of fracture of the femur which is not open to the same objection, or in which there would be less atrophy of the soft tissues permitting the backward curving? Certainly in none is the tendency to the defect as easily overcome as in this, where the mere tightening of a few strips will give the support in the right place; and, being in view, the right place is known.

Now for a few of the advantages of this apparatus. It is easily made, cheap, quickly applied, and not painful. In its use no excoriations or ulcerations of the soft parts, as the perineum, heel, or knee, can follow. Through the freedom of motion permitting the patient to lie down or sit up, and change his position, the general health is better preserved; while at the same time bed-sores are almost impossible, and the calls of nature can be conveniently attended to. The site of fracture being open to inspection, we can be sure of apposition without disturbance of dressings to make examination. There is no compression of the vessels, hence circulation and nutrition go on uninterruptedly, repair is best provided for, and risk of non-union diminished. Requiring no setting of the bone, the powerful pulling, with risk of injury to the soft parts, is avoided. In compound fractures, dressings can be applied and renewed without disturbance of the limb, thus reducing the sufferings of the patient to the minimum, while cleanliness is easily maintained. These are advantages—nay, requisites—not possessed by any other apparatus; and while it is not claimed for this that in every respect it is better than all others, I prefer it, in a greater number of cases, to any I have seen in use, and would bespeak for it a candid, impartial consideration, and a fair trial by my professional brethren.

ART. XV.—*On the Identity of the Red Blood Corpuscles in different Races of Mankind.* By JOSEPH G. RICHARDSON, M.D., Microscopist to the Pennsylvania Hospital.

EXACT measurements of the red blood disks of man and of those of the ox, pig, cat, horse, deer, and sheep (from which I contend the human blood globules can with certainty be discriminated) have acquired so much importance through recent discussions upon the diagnosis of blood stains, that I trust the subjoined investigations will prove valuable to the medical and legal professions.

I present in them the commencement of an extended series of observations upon the identity or diversity of blood corpuseles from the genus *Homo* in different races and under various conditions of sex, age, habits of life, hygienic influences, disease, etc., and also of those from the animals enumerated under similarly diverse circumstances; they constitute moreover some of the first medical results of our Centennial Exhibition, which by attracting to Philadelphia visitors from every quarter of the globe has rendered it possible for me to procure well-authenticated specimens of blood from many different nations.

The samples were each procured by myself from the individuals mentioned (sometimes only through much persuasion), by puncturing a finger with the quick stab of a cataract needle, pressing out a small amount of blood, applying a clean slide to the apex of the drop, and then spreading out the portion of fluid which adhered to the glass, with the end of another slide, according to Prof. Christopher Johnson's excellent method.

The measurements were all made with a $\frac{1}{2}$ inch immersion objective and by the aid of a cobweb micrometer eye-piece, giving when thus combined a power of 1800 diameters. The value of the degrees of the eye-piece micrometer with this objective, at the cover correction employed, was determined by a stage micrometer kindly compared for me by my friend Col. J. J. Woodward, of Washington, D. C., with one carefully tested by the standard in the U. S. Coast Survey Office, and which he has pronounced practically correct.

Instead of measuring all corpuseles, deformed or otherwise, in two directions, as proposed by Dr. Woodward (*Phila. Medical Times*, vol. vi. p. 457), I prefer to determine the size of unaltered, *i. e.*, circular corpuseles *only*. By this plan, which I believe is that of our highest authority upon the subject, Prof. Gulliver, we obtain the dimensions of nearly normal cell elements, such as are exhibited in Dr. Woodward's beautiful photograph of fresh blood (*Army Med. Museum*, No. 861, new series), where, as in fluid preparations, but little variation in size exists among the corpuseles; and escape being misled by pathological specimens similar to those displayed in photograph No. 836, of the same invaluable series.

Since the chief cause of marked variation in magnitude as well as of distortion in shape among blood disks spread out upon glass is, I think, their mutual attraction and repulsion during the process of drying, my investigations were made upon portions of slides where the corpuseles were very sparsely disseminated, and then, to secure the most infallible accuracy for my deductions, as the preparation was moved along, I measured *every isolated circular red disk*, which came into the field of the microscope. In doing this I cautiously avoided recording those which manifested even slight departures toward an oval form, and by several experiments learned that the deviation corresponding to a transverse diameter of 1-3030 and a conjugate of 1-2857 of an inch was recognizable by a single glance.

One hundred corpuscles in each specimen were measured and the dimensions as I read them off in millionths of an inch noted down generally by an assistant. These memoranda, with the preparations to which they refer, are carefully preserved for examination by any experts who may desire to convince themselves respecting the substantial foundation of fact whereon I base the following conclusions:—

Drop 1. Obtained Oct. 11, 1876, from Mr. I., member of the Japanese Centennial Commission. Average diameter 1-3212 of an inch, maximum 1-2777, minimum 1-3737. Of the 100 corpuscles, 8, or 8 per cent., were less than 1-3448 of an inch; 10 per cent. were more than 1-3030, and the remaining 82 per cent. were between these two sizes.

Drop 2. Señor F. C., æt. 30, born in Valencia, member of Spanish Commission. Average 1-3226, maximum 1-2777, minimum 1-3571. Eighty-nine per cent. ranged between 1-3448 and 1-3030 of an inch in diameter, whilst 6 per cent. fell below the former and 5 per cent. exceeded the latter magnitude.

Drop 3. Mr. A. M., about 38 years of age, born in Verviers, Belgium Delegate. Average 1-3203, maximum 1-2777, minimum 1-3846. Eighty-eight per cent. ranged between 1-3448 and 1-3030, whilst 7 per cent. fell short of and 5 per cent. exceeded these sizes.

Drop 4. Herr E. G., about 40 years old, born in Zurich, member of Swiss Commission. Average 1-3203, maximum 1-2857, minimum 1-4000. Eighty-two per cent. ranged between the above-named limits, while 7 per cent. fell short of, and 11 exceeded them.

Drop 5. R. E., æt. 29, born in Constantinople, member of Turkish Commission. Average 1-3197, maximum 1-2777, minimum 1-3846. Eighty per cent. ranged between the limits mentioned, whilst 4 were less and 16 more than these measurements in their diameter.

Drop 6. J. P. R., æt. 25, born in Copenhagen, *attaché* of Danish Commission. Average 1-3257, maximum 1-2857, minimum 1-4000. Eighty-two per cent. between limits mentioned, 12 below and 6 above them.

Drop 7. Herr G. K., æt. 27, born in province of Vladimir, member of Russian Commission. Average 1-3190, maximum 1-2857, minimum 1-3571. Ninety-one per cent. between above-named limits, 2 below, and 7 above them.

Drop 8. C. H., æt. 35, born in Christiania, *attaché* of Norwegian Commission. Average 1-3252, maximum 1-2857, minimum 1-4000. Eighty-six per cent. fell between sizes named, 10 below, and 4 above them.

Drop 9. Dr. J. L., æt. 33, born in Kongsbacka, member of Swedish Commission. Average 1-3254, maximum 1-2777, minimum 1-3737. Eighty-two per cent. fell between sizes named, 13 below, and 5 above them.

Drop 10. Sig. V. F., about 35 years old, born in Bologna, member of Italian Commission. Average 1-3272, maximum 1-2777, minimum 1-4000. Eighty-three per cent. of the measurements lay between dimensions above stated, 10 fell below, and 7 surpassed them.

Drop 11. M. P. P., æt. 67, born in Bordeaux, member of French Commission. Average 1-3239, maximum 1-2777, minimum 1-3737. Eighty per cent. were found to be within the limits specified, 12 fell beneath, and 8 exceeded them.

Drop 12. I. L., æt. 52, dark mulatto, born in Delaware, U. S. Average 1-3229, maximum 1-2857, minimum 1-3856. Eighty-three per cent. fell within limits noted, 11 below, and 6 above them.

Drop 13. E. M., æt. 48, Cherokee Indian, born in Florida, U. S. Average 1-3215, maximum 1-2857, minimum 1-4000. Eighty-three per cent. fell between limits stated above, 10 fell below, and 7 exceeded them.

Drop 14. J. R., æt. 40, white male, born in Pennsylvania, U. S., of English parentage. Average 1-3191, maximum 1-2777, minimum 1-3846. Eighty-five per cent. came within limits mentioned, 6 fell below, and 9 above them.

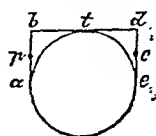
Combining these deductions, we find that of the whole 1400 corpuseles each separately measured, the average was 1-3224 (.007878 mm.), the maximum 1-2777, and the minimum 1-4000 of an inch; 1158 or 83 per cent. measured between 1-3448 and 1-3030 of an inch in diameter, and consequently under a power of 200 would appear about the same magnitude; 118 or about 8 per cent. were less than 1-3448, and 124, or nearly 9 per cent. were more than 1-3030 of an inch in diameter. The total number of corpuseles 1-4000 of an inch across was 6, or less than one-half of one per cent. The total number 1-2777 of an inch in diameter was 10, or less than one per cent.

The somewhat smaller averages of the Italian, Swedish, and Norwegian specimens are perhaps due to slight accidental variations in spreading out the layers of blood for examination, and cannot be accepted, at least without further research, as indicative of either personal or national peculiarities.

Such minute differences indeed must be expected with our present methods of observation, and it seems to me that, taken as a whole, my results powerfully confirm the Scriptural declaration, that the Lord "made of one blood all the nations of the earth."

ART. XVI.—*Ophthalmic Contributions.* By GEORGE STRAWBRIDGE, M.D., of Philadelphia. (With a wood-cut.)

I. *Modified Flap Extraction Operation.*—In a report of some forty recent cases of cataract extractions, published in the *Philadelphia Medical Times* of February 19, 1876, I referred very briefly to an operation which was designated as the "Modified Flap Operation." Since then my experience in this operation has been considerably enlarged, and with most gratifying results. If a circle be drawn having a radius of 6 mm., (*vide* Fig.), it will closely represent the size of the cornea. Now, if the line *b d* be drawn tangent to the vertical diameter of the cornea, as represented by the circle, and the lines *b a* and *d e* be drawn tangent to the horizontal diameter, two triangles will be formed by the intersection of these three lines, *a b t* and *e d t*, which triangle practically represents the most available ground for the puncture and counter-puncture of any incision that may be made for lens extraction. In fact, the puncture and counter-



puncture must closely follow the lines ab and ed to form an opening sufficiently large for the lens exit. (The same rule would hold good for the inferior operation.)

The centre of an incision, whether a flap or a lineal cut, should be tangent to the corneal margin, for two important reasons: The greater completeness of the iridectomy, a proceeding generally admitted as greatly increasing the success of the operation; and, secondly, the greater ease attending the lens removal and the escape of any cortical remnants that may be left.

In regard to the puncture and counter-puncture. The nearer the points b and d are approached, the greater the risk of ciliary inflammation; while, on the other hand, the points a and e necessitate a large corneal flap, and great risk of corneal suppuration. Therefore the points p and c have been chosen as midway between these two dangers; they being at a distance of 0.5 mm. from the corneal border, and 3 mm. below a line tangent to the superior corneal border.

Method of Operation. 1st Stage.—A Graefe knife, held horizontally, enters the eyeball at a point 0.5 mm. from the corneal border and 3 mm. below a line tangent to the superior corneal border. The counter-puncture is made at a corresponding point on the other side of the cornea, and the incision completed so as to form a tangent to the superior corneal border, the eyeball being held by fixation forceps. This incision forms an opening of 10–11 mm., amply sufficient for the exit of any lens—the ordinary lens diameter being 9–10 mm., and thickness 4 mm.

2d Stage. Iridectomy.—If the patient is quiet, the forceps are removed, and the iridectomy made in the ordinary manner, but of moderate size.

3d Stage. Laceration of the Capsule.—The attempt is always made to remove with the lens a triangular piece of the anterior capsule. The cystotome is passed down the anterior chamber to the middle of the lower edge of the pupil, and freely incises the capsule as it is drawn from this point upward along the inner pupillary edge. It is then again passed to the central point of the lower pupillary edge, and drawn upward along the outer edge of the pupil, and the triangle completed by a horizontal sweep of the cystotome along the upper border of the lens. This triangle of capsule often comes away with the lens, and lessens greatly the necessity of secondary operations.

4th Stage. Lens Delivery: accomplished by gentle continuous pressure on the cornea at the junction of the middle and lower thirds with a Daviel spoon, and the lens remnants removed by gentle inward and upward pressure of the lower lid on the cornea, the finger being used for the purpose.

Advantages of this modification.—1. The lessened risk of ciliary inflammation as compared with the Graefe-Linear method, and the less probability of corneal suppuration as compared with the corneal flap.

2. The removal of the forceps, after the completion of the cut, avoids all pressure on the eyeball during this critical time.

3. The removal of the capsule triangle greatly lessens the number of secondary operations.

II. *Needle Operations in Cases of Retinal Detachment.*—In my operations I have followed Bowman's plan of tearing the retina with two needles, but have used needles of unequal size—one quite large, the second one very fine—for the double purpose of making a communication between the vitreous chamber and the sub-retinal pouch, and also of allowing the sub-retinal fluid to drain out through the sclerotic opening made by the passage of the large needle.

If the position of the effusion permitted, as was usually the case, the region of the eye punctured has been from a quarter to half an inch behind the cornea, and between the straight muscles; the needles being thrust vertically in toward the centre of the eyeball, passing through the detached retina, and then tearing it by crossing or separating the needles, the forceps being but seldom used. Generally there has been subconjunctival effusion immediately after the puncture; the vitreous humour often showed a considerable amount of cloudiness, but lasting only a short time, and in some instances the retinal tear could be distinctly seen with the aid of an ophthalmoscope. No great amount of irritation followed any of these operations, atropia locally and a pressure bandage being used for forty-eight hours afterwards.

CASE I.—Mr. J. E., æt. 43, applied September 3d, 1875. Right eye; cataract of four years' standing, following retinal separation. No light perception; refraction of eye, high grade of myopia. Left eye, myopia = $\frac{1}{2}$. Retinal separation in its entire upper and outer parts. Visual field lost except in a very small upper portion, where he counted the fingers with great difficulty. Separation of eight days' standing, the visual field could only be determined by the finger test, as the amount of vision did not admit of the use of a perimeter. The first and second operations did not produce any change, they being made within one week of each other, as so little irritation existed. The third operation yielded good results. The retinal tear could be now for the first time distinctly seen; also considerable amount of fluid drained from the sclerotic opening immediately after the withdrawal of the needle, followed by low tension of eyeball. I am inclined to believe that the two preceding operations did not tear the retina, as the ophthalmoscope was carefully used to detect it without avail. The patient could read type—Jaeger No. 3. Retinal separation had disappeared, and the visual field was restored. Very little reaction was caused by the puncture, beyond slight vitreous humour cloudiness lasting a very short time. This improvement lasted twelve weeks, when the separation again took place, but in the lower half of the retina. A fourth operation restored vision to reading moderate print. This improvement lasted eight days, when separation took place at the same point. A fifth and sixth operation caused a replacement lasting about eight days after each, when it again reappeared, always now in the lower half. The seventh operation was

made on January 8th, 1876, followed by rapid replacement and restoration of vision to reading power Jaeger 3, for distance $V = \frac{14}{100}$, which has lasted up to present time, October 23d, 1876—over eight months. At examination made a few days since, I could detect the separation again commencing in the lower half.

A more discouraging case than this could not be supposed. One eye entirely lost, the second eye reduced to barely light sensibility as counting of the fingers was most imperfectly done, where useful vision has been given for a term extending over a year, and with a prospect of its being still further prolonged.

The reaction from these repeated operations was very slight.

CASE II.—Miss M., æt. 30, applied July 8th, 1875. Left eye: Entire retinal separation of two years' standing. No light perception. High grade of myopia. Right eye: $M = \frac{1}{2}$. Retinal separation upward and outward comprising one-third of retina of two weeks' standing, with entire defect in corresponding visual field. Read Jaeger No. 11.

July 14. Operation on upper outer quarter, with two needles. Great leakage into conjunctival sac.

15th. Restoration of visual field. Reads large print.

27th. Visual field good. Reads Jaeger 5. Can see the tear in the retina by aid of ophthalmoscope.

31st. Improving. Reads Jaeger 3. Good visual field.

August 8. Reads Jaeger 2.

April 6, 1876. Seen M. last time. No retrograde either in visual field or reading power, nor could any separation be detected with the ophthalmoscope. No amount of irritation was caused by the operation.

Another most unpromising case. One eye lost, and all conditions tending to same result in second eye.

In these two cases it was not difficult to decide as to the propriety of an operation. There was all to gain in both of these cases, but I would not be willing, as long as one eye was preserved, to risk the operation on the second eye, for fear of sympathetic trouble; but in cases where vision remained in one eye only, and that in such peril, I think the operation to be strongly indicated. Both Graefe and Bowman, from their experience, concluded that the operation, carefully made, was a safe proceeding. As to permanent results, their experience showed improvement lasting from one month up to several years, in many cases; in others, very little profit, but no serious harm from the operation. It must also be considered that these are desperate cases, where little can be hoped for, from non-interference.

For information concerning the literature of the subject, the reader is referred to Siehel, *Clinique Europeenne*, 1850, No. 29. Kittel, *Allgemeine Wiener Medicinische Zeitung*, 1860, No. 23. V. Graefe, *Archiv f. Ophthalm.*, vol. ix. p. 85, 1863. Bowman, *Ophthalm. Hospital Reports*, May, 1864. L. V. Wecker, Text-book.

III. *Optical Delusions in the Insane*—probably caused in some cases by disease of the *Macula Lutea*.—The clinical history of this case is interesting from the fact that the optical phenomena were probably caused by disease of the macula, retinitis maculæ; and as these were a most prolific source of annoyance and distress to the person, he considering them originating from a diseased mind, the recognition of their probable source, as being in the macula and not the brain, proved the greatest relief and comfort to the patient.

Mr. C., æt. 59, a victim of self-abuse from twelve years of age up to time of his married life ten years later; also, a moderate user of alcohol. Shortly after his first marriage, owing to anxiety caused by the sickness of his wife, and want of sufficient means of support, he became troubled with mental hallucinations, and was in constant fear of receiving harm from members of his wife's family, owing to his imagined want of care for his wife. This disordered state of mind lasted nine months, during which time his wife died. He then sufficiently recovered to resume his business, and married a second time. Worry from pecuniary troubles caused a return of his old hallucinations for some ten months, when he again recovered and kept well until the death of his second wife, which loss entirely upset his mental powers for some months, then for a year had a comparatively clear mind, followed by an attack of religious excitement, imagining himself to be an Anti-Christ. Gazing for some ten minutes one day on the sun, thinking it to be a divinity, he noticed immediately afterwards a black spot. This condition lasted constantly for two weeks. Then from this spot appeared light scintillations, changing into light circles, and nine months later changing into a face, having a hideous grin, and constantly mocking him. During this time the eyes were sensitive to light, and painful from exposure or any amount of work. From that time up to the present this face has been his constant companion, and is a constant source of terror to him—as he of course attributes its origin to a diseased mental condition, and its continual presence a constant proof of his incurability.

Status Presens of the Eyes.—Right eye, vision = $\frac{2}{10}$. Visual field greatly lessened in extent, particularly in vertical meridian, with small central scotome, also sensitive to light.

Ophthalmoscopic Examination.—Atrophic excavation in the temporal side of optic papilla, with a greenish rim around the outer half of the sclerotic foramen, the arteries small and some tortuosity of the retinal veins. The macula appears as an *ellipsoid figure filled with distinct black dots*; in some places several of these dots appear to coalesce, forming small black patches. The change is most marked, and would be considered as caused by *inflammation* in the retina and choroid at this part, (Retinitis Maculæ), and readily accounting for the central scotome.

Left eye shows the same changes that have been described as existing in the right eye.

From the fact of the existence of this marked macula change, with the accompanying central scotome, I felt warranted in telling the patient that most probably the existence of his tormenting companion—the face with the hideous grin—was due to *ocular disease* rather than of brain origin, thereby greatly relieving his distress. Of course it is impossible to speak with certainty in a case of this kind, but at the same time the

above explanation seems, under these existing conditions, at least to be probably the correct one.

I have endeavoured to enlarge my experience since meeting with this case, but find that insane patients with optical delusions are the rare exception, and I must content myself at present with the history of this one case.

ART. XVII.—*Extraordinary Case of Urinary Calculi.* By J. R. MACGREGOR, M.D., of New York City.

THE following case is brought to the notice of the profession, under the belief that it presents some rare and remarkable features.

It is not unusual to see in pathological collections, specimens of calculi that are noticeable either for size or number, or perhaps both; but the case about to be narrated may be safely asserted to be, in both the qualities mentioned, as well as some other peculiarities, if not unique, at least extremely uncommon.

I was called in May last to see Mrs. B., aged 63, married, who was suffering from symptoms referable to the bladder, among which, pain and difficulty in urinating were prominent, and accompanied with considerable constitutional disturbance, manifested by fever and nausea. Her general condition was enfeebled, and she had been in poor health for several years. According to her own statement, she had not at any time experienced an attack of kidney colic. I was shown a box containing upwards of three hundred calculi, varying in size from that of an ordinary shot, up to a large bean; these she had passed by the urethra during the past four years. They were of various shapes, and from attrition, had been worn down, presenting facets beautifully polished; many of them assumed a cuboidal form. In colour they varied from a yellowish-brown, to that of fawn mixed with gray, and were more or less mottled.

A vaginal examination revealed the presence of a large number of apparently the same kind of concretions, seemingly occupying nearly the whole cavity of the bladder, and the mass from its bulk pressing down upon the superior wall of the vagina, encroaching upon its calibre, and altering the direction of the urethra so much, that a catheter to be introduced required to be pointed markedly downwards.

Two or three days of appropriate treatment rendered her condition sufficiently comfortable to warrant an operation for extraction; and after a gradual dilatation of the urethra by means of large-sized bougies, which process occupied a period of four days, the blades of a pair of uterine dressing forceps were introduced into the bladder, and a finger of the left hand passed into the vagina as a guide; none of the stones, however, could be seized, and after repeated and protracted efforts to no purpose, the operation for the time was relinquished. The cause of the failure will be apparent in the subsequent history of the case.

The degree of pain and general distress following the attempt at removal so discouraged the patient, that during the whole summer she could

not be prevailed upon to submit to a second operation, and, as before, she continued to pass calculi at short intervals.

A visit to the country of some three weeks, undertaken with a view of improving her health, resulted in no benefit, and her condition became so miserable, that on the 19th of September, she voluntarily came to my office and proposed submitting again to an operation. Arrangements were accordingly made, and two days subsequently, a second effort was attempted, in which I had the valuable aid of my friend, Dr. W. H. Studley, of this city.

Anæsthesia was produced at first by chloroform, and afterwards kept up by ether; dilatation of the urethra was initiated by the introduction of a large gum-elastic bougie; this was replaced by one of flexible metal, calibre No. 26, American scale, which rendered it not difficult to insert a two-bladed anal speculum into the urethra. The blades were expanded cautiously and gradually, and in the course of twenty minutes, the urethra became sufficiently distended to admit a steel scoop without removing the speculum; no calculi, however, could be engaged, and, moreover, it was noticed that the metallic sound of contact with them was absent. The speculum was then withdrawn, and the finger of the operator passed into the bladder: it was then discovered that the calcareous collection was apparently inclosed in a cyst, but as far as the finger could reach, no opening communicating with the cavity of the bladder was discoverable. At this juncture, a hasty consultation was held, in which it was decided to make an opening through the wall. This was accomplished with some difficulty, and the finger then could be brought in direct contact with the concretions, and a couple somewhat larger than a grain of corn were extracted; examination then revealed the presence of a stone of large dimensions, which had been concealed by the smaller ones, and prevented the further removal of the latter by their retreating behind it out of reach. It was impossible to estimate the bulk of the former, but from the size of the presenting part, it was evidently too large to admit of removal, and all further attempts were abandoned.

During the operation, the anæsthetics had acted very kindly; respiration and the action of the heart went on regularly; but, while recovering from insensibility, sudden and alarming syncope came on, in which both respiration and pulsation ceased: active measures were promptly resorted to, which succeeded in a short time in restoring her.

The local pain referable to the urethra and bladder subsequently was considerable; in this, aside from the administration of anodynes, she derived the most relief from vaginal injections of hot water. The urine drained off continuously by drops.

The patient did not fully react from the effects of the operation; symptoms of peritonitis soon developed, with protracted vomiting and increasing prostration. Death took place on the 23d, 48 hours after the operation.

Post-mortem, 72 hours after death.—This, from reasons not necessary to state, was more limited in extent than was desirable. Rigor mortis well marked: some tumefaction of the abdomen. On exposing the abdominal cavity, the small intestines presented numerous inflammatory patches of an arborescent form, upon some of which were thin layers of exudation lymph; these here and there had agglutinated the intestines together. The amount of intestinal distension was only slight. The same inflammatory process had extended to the peritoneum of the abdominal walls. Occupying the ordinary position of the bladder, which it was

at first supposed to be, was a large tumour, reaching nearly to the umbilicus, and presenting much the appearance of an enlarged uterus during gestation. This mass contained the calculi, and on removal, proved to be the left kidney; the pelvis of which had become thickened and distended into an enormous sac. The body of the organ had undergone little or no structural alteration; it had changed shape, however, being flattened out on its transverse diameter, evidently from gradual accommodation to the enlarged pelvis. Its secretory function was apparently unimpaired; several ounces of urine escaping from the sac when opened. At the lower portion was an opening about an inch in length, corresponding to a similar one through the superior portion of the bladder; these were made at the operation for removal during life.

The sac contained upwards of five hundred and twenty calculi, of a size varying from that of a mustard seed to an almond, and a very large one, which in its recent state weighed *fifty-one ounces*; it was oval in shape, with the lower portion posteriorly bevelled off nearly to an edge, and polished by friction with the smaller ones: most of the latter were in this portion of the sac; a few, however, were in the superior part, and the upper end of the stone presented a small area of surface similarly polished. Its dimensions were, length, $6\frac{3}{4}$ inches; greatest circumference, $16\frac{3}{4}$ inches; circumference around the transverse diameter, $12\frac{1}{2}$ inches. The composition is supposed to be (no section as yet having been made) uric acid, in alternate layers with earthy phosphates: that part of its surface which was in contact with the smaller calculi, presents the brown colour characteristic of uric acid, and the rest of the surface nearly white with phosphatic incrustation; in which are thickly imbedded crystals of the ammoniaco-magnesian phosphate. The smaller calculi, upon section, show finely alternating layers of uric acid and phosphates; the nuclei being composed of the former substance.

In considering the features of the foregoing case, the writer is fully aware that, had the actual condition been known as revealed by the autopsy, surgical interference would have been unjustifiable; and in this connection, the question might possibly arise, could it not have been foretold? He can only answer, that with the light that was in him, every endeavour was made to comprehend all that could be known in a case beset with hidden danger; in his opinion of such a nature as it would be reasonable not to look for, even if, *a priori*, it would be regarded as possible; and in the judgment formed, he was fortified by that of a gentleman in whose opinions, from long experience, he has learned to place the greatest reliance. That part of the history to which this question refers, could have been conveniently omitted, but not without detracting much from the instructive value of the case. Recognizing, therefore, the principle that the facts of important cases belong to the profession, he has ventured to include the whole, at the risk, perhaps, of adverse criticism.

ART. XVIII.—*Aphonia of Ten Months' Duration from Paralysis of the Arytenoideus Proprius Muscle, with Concomitant Heart Disease (Aortic Obstruction); voice restored by the direct application of electricity to the vocal cords.* By BEVERLEY ROBINSON, M.D., one of the Physicians to Charity Hospital, New York.

L. S., æt. 42, single, residing at Sharon, Connecticut, was placed under my care on May 22, 1876, through the courtesy of Dr. C. R. Agnew of this city.

She has always enjoyed good health. Four years ago, in consequence of prolonged exposure to cold, she suddenly lost her voice. Two or three months afterwards it came back spontaneously. In the month of August, 1875, her voice again disappeared, and still apparently from the effects of a cold. This time she did not recover it, and she consulted a physician, who considered her case to be one of functional aphonia, and made external applications of the faradic current to the throat. This treatment remained without effect.

Actual state.—Patient speaks in a whisper; no local pain over or in the larynx; antecedent history good; general health excellent; hearing impaired for some years.

Pharynx.—Slight catarrhal condition.

Larynx.—In phonation inter-ligamentous portion of glottis approximates well. Inter-arytenoid portion does not reach the median line, but leaves a triangular open space, with base of triangle looking posteriorly towards wall of pharynx. Inter-arytenoid fold slightly thickened; ventricular bands somewhat congested.

Treatment.—Application to larynx of ferri perchlor. (3ij-3j). Caps. eubæ (10 grs.), six a day. Troch. acid. benzoici one t. in die.

May 25. The faradic current was applied for the first time to the arytenoideus muscle, and continued every other day until June 9.

June 1. The medicine above mentioned was omitted, and $\frac{1}{30}$ grain of strychnia with a grain each of pyrophosphate of iron and quinia was administered three times a day, and local applications of a solution of nitrate of silver (gr. xx-3j) were made twice to the larynx from May 25th to June 9th.

9th. Could speak throughout the day in a moderately good tone of voice and without great effort. During the night, however, she loses her voice, and is unable to talk louder than a whisper on awakening in the morning. Treatment by faradic electricity and strychnia is continued.

15th. The following notes were taken: Voice continues to improve, although still weaker than formerly. She does not lose it in the night, and on rising can talk tolerably well. At first, however, she is obliged to make more effort to articulate distinctly than afterwards. When my patient lost her voice last August (ten months ago) she felt a dull pain situated profoundly at the base of the neck, just above the clavicle, on the left side. At present she has another focus of pain in the left mammary region. The pain here is very similar in character to that still persisting at the base of the neck. Pain in the regions named is much augmented by even slight pressure. By palpation and percussion nothing abnormal is discovered, and no swelling is noticeable. Auscultation shows normal respiration, but reveals a distinct, rather rough bruit at the base of the

heart, accompanying the first sound, and propagated into the arteries of the neck. The diagnosis of "aortic obstruction" is made, and, upon interrogating my patient, I find she has had latterly slight swelling of the feet and ankles at bedtime, and occasional palpitations. Since she has been under my care she has had several attacks of faintness without apparent cause, and resembling incomplete syncope. Previously she never had had anything of the sort.

Inasmuch as she is a large, robust, vigorous woman, of sanguineous temperament, I thought the tonic remedy she had been taking, by my orders, might have something to do in the causation of these attacks, and therefore prescribed elixir of calisaya with quinia in tonic doses.

A few days later my patient left town, after having visited Dr. Agnew, and made known to him the improved condition of her throat, and I heard nothing from her until September 9th, when she wrote to me:—

"I have not forgotten to let you know of my welfare, and I think you will be glad to hear that my voice is now as strong as ever. I can talk, laugh, call, read aloud, and use it as other people do, without any inconvenience. But it is only recently that it has regained its full strength, and the improvement has been very gradual, so I have delayed waiting till I could announce its entire restoration. The heart trouble has been much better, so that sometimes for weeks I have had scarcely a twinge of the old pain, but this week it has shown that the foe is still lurking in ambush, and ready for a spring if opportunity offers. However, I do not apprehend any serious difficulty, though, perhaps, some annoyance."

The special interest of this case consists in the connection which may possibly be established between the loss of voice and the valvular affection of the heart. Very many instances have been reported already by laryngoscopists of so-called hysterical, or functional aphonia. In some of these, hysteria was made apparent, through its usual symptoms; in others, there was no substantial reason for making this diagnosis. Frequently the loss of voice was traceable in its origin to a cold; but the cold had long since disappeared, and aphonia persisted. And, under these circumstances, a whispering voice has remained for months and years, in spite of much and various medication. When, however, the faradic current has been applied directly to the vocal cords, the voice has sometimes returned in its normal strength, after one or two applications of electricity, or again it has come back by degrees, and only after persistent treatment of several weeks.

These two categories of cases have, nevertheless, been included in one over-crowded and questionable division of "cases of functional aphonia."

From this section, or class, it is time to separate cases where a *probable* physiological explanation may be given of a chronic morbid condition. In my patient, although there were no physical signs of aneurism, and but moderate enlargement of the heart, there was notable aortic obstructive disease, which is frequently accompanied by change of the cardiac muscle in the vicinity of the affected valves and orifice.

Now, this outgrowth is especially due to the production of fibrous tissue, which takes place in the more or less hypertrophied left ventricular walls. This heterogeneous development, by its nature, tends towards contraction,

and after this manner will exercise pressure upon vessels and nerves. What are the peripheral extremities of nerve in the heart structure, which may be affected?

Evidently the branches from the great cardiac plexus, which derives its origin from the pneumogastric, and from the cervical ganglia of the sympathetic. In certain cases, therefore, of sudden loss of voice, organic disease of the heart may be an efficient cause of its production, and the presence of "cold" merely a predisposing one.

The *modus operandi* must seemingly be that of reflex paralysis effected through certain motor fibres of either vagus. One or more of the intrinsic muscles of the larynx may be affected. And the extent and duration of the loss of functional power in the vocal organ will, no doubt, depend upon the area and amount of pressure exercised within the cardiac walls upon nerve structure. It is a well-corroborated fact that the effects produced in the action of the vocal cords by pressure due to aneurismal tumours of the aorta, are proportioned to the degree in which the vagus, or its most important branch (recurrent nerve), becomes involved. At times, complete and lasting loss of voice is the consequence. Again, the voice comes and goes in a very intermittent and sudden manner. These are *facts*, and for lack of a better explanation we interpret them to mean, in their causation, at least, a more or less complete suppression of nerve force generated, occasioned by remote pressure. Thus it may be in instances of aphonia, brought on in reality, by intra-cardiac change, and irritation or pressure of nerve fibres originating directly in the great cardiac plexus. Whenever the pressure is slight the voice may be restored by one or two direct applications of the faradic current to the vocal cords; whenever the pressure is considerable the voice can only be re-established (if it be at all possible) by degrees, and after somewhat prolonged use of electricity. And the fact of the restoration of the voice for several weeks or months is no proof that it will not disappear once more for a time, and again return. In questioning a patient with intra-cardiac trouble and loss of voice, we should be careful not to be misled by certain symptoms, which may be present at the beginning of the aphonic state. Such patients may presume they have taken cold, and may even come to the hospital to be treated for an affection of the air passages.

Paroxysms of pain, together with cough, croup-like in character, and dyspnoea, due to spasm of the bronchial muscular fibres, may all complicate the loss of voice when peripheral nerve fibres of the cardiac plexus are irritated. And yet in these symptoms we have not those which are necessary to the existence of a bronchial inflammatory trouble. Again, my explanation of such cases of aphonia, as our preceding history presents an example, differs but little from that of aphonia occurring in the incipient stage of tubercular disease of the lungs, without any change of the laryngeal mucous membrane. Loss of voice is then "caused apparently by a

reflex irritation of the laryngeal nerves, due to disturbance of the peripheral branches of the pneumogastric by the tubercular processes in the lungs."

Further, I would remark that my interpretation of so-called functional aphonia, when heart disease is manifest, is far less liable to objections, and, indeed, far more probable as regards its pathology than interpretations which trace connection between aphonia by paralysis of intrinsic laryngeal muscles and remote organs, animated by nerve trunks of very different origin from those which govern vocal function.

I shall not dwell upon the existence of pain in my case at the base of the neck, and over the præcordial region, further than to refer to the fact that this symptom, which *first manifested itself* at the period when the voice was lost for the second time, is also fairly attributable to a similar cause for its production, and this appears to me to strengthen my explanation of the etiology of the loss of voice.

ART. XIX.—*Conversion of Face Presentation into one of Vertex by Aid of Knee-elbow Position.* By J. R. HUMPHREY, M.D., Snickersville, Virginia.

ON Nov. 11, 1876, at 11.30 A.M. I was called to attend Mrs. S., æt. 20, primipara. She stated that she had had pain since early in the morning. There was great anterior obliquity of uterine ovoid. Examination revealed os partly dilated, and head on a level with brim of pelvis, presenting by the face in mento-posterior position. It was decided to be best to wait and let the labour take its natural course, viz., rotation of chin to the front. At 2.30 P.M. the condition of things was much the same, with rupture of membranes added, so I determined to make an effort toward converting the face presentation, if possible, into one of the vertex. Having been led to regard the genu-pectoral position with favour as an auxiliary in certain cases of podalic and cephalic version, a trial was made of it in this case, but owing to insufficient dilatation of os, it had to be abandoned. 4.30 P.M., Dr. R. Hoge in consultation. Examination now showed that the os was more fully dilated, and that the chin had rotated toward the sacro-iliac junction. The pains at this time were tolerably strong, and we waited awhile to see what the powers of nature would accomplish unaided. Between 5 and 6 o'clock—the woman had changed her position in the mean time—the chin was found facing almost directly the anterior surface of the sacrum, and not engaged in the excavation. The intervention of art seemed to be now called for; so at my proposal we decided to try, for the second time, conversion of the presentation to one of the vertex. Accordingly we placed some pillows

under our patient's knees, at the same time letting her breast and head rest on the bed; thus bringing her body at an angle of about 60° with the horizon, and her buttocks well to the edge of the bed, I then with little difficulty introduced my hands into the uterus, and getting my fingers well over the vertex, succeeded in flexing the head on the breast and bringing it into left occipito-anterior position. The ease afterwards did well but progressed slowly, terminating at 2 A. M. that night.

Cazeaux,¹ in treating of mento-posterior position, says:—

“It is well known that a spontaneous delivery in face-positions requires that they should be converted into mento-pubic ones, but this process of rotation, which is easily effected in the mento-anterior varieties, that is to say, in the cases where the chin was primitively in relation with some part of the anterior half of the pelvis, is much more difficult in the mento-posterior positions, and sometimes even it does not take place at all.”

He then gives a hypothetical ease of mento-posterior position, very closely resembling the ease just related; and recommends its conversion into one of the occiput, laying down for that purpose a rule for intra-uterine manipulation which was followed in the present instance; after which he passes upon it this withering condemnation:—

“I am now convinced that this manœuvre will rarely prove successful, therefore it should be attempted very carefully and pelvic version substituted for it without much delay.”

It must be remembered, however, that the manœuvre given by Cazeaux was intended by him to be used in the *dorsal position* of the woman, as he has not hinted at any other. It is the writer's conviction that Cazeaux, had he used the procedure *in connection with the knee-elbow position* of the woman, would have had less cause to be dissatisfied with it. He (the writer) believes that in mento-posterior positions where rotation fails to take place or does so very slowly, and even in other face presentations, if the pelvis is not of ample proportions, it would very generally be wise to make use of it; feeling confident that it would often substitute an easy, natural labour for one tedious and painful, not to say dangerous, to mother and child.

He also ventures to state, judging from his own case, that, by aid of gravitation conferred by the knee-elbow position, the accoucheur will be able to effect a change of presentation with comparative ease to himself and his patient.

¹ Ther. and Prac. Midwifery, 5th Amer. ed., p. 845.

ART. XX.—*Report of a Case of Multiple Emboli caused by Organic Disease of the Heart, and producing Nutritive Changes; Atrophy of one Arm and Gangrene of one Leg.* By W. H. WEBB, M.D., of Philadelphia.

Miss G., 49 years of age; her constitution and general health had been tolerably good until about fifteen years ago, when she noticed that she had attacks of numbness of both arms, which were relieved by frictions, and would pass off in a few days, to recur in from three to six months. She was also affected during this time with dyspepsia and attacks of nausea. Her father and two paternal uncles died of heart disease, the former quite suddenly and without premonition; her mother is still living and is demented. During September, 1874, she was troubled with nausea, vomiting, and palpitation, with difficulty of breathing, which prevented her from assuming the recumbent posture for several weeks; there was swelling of both feet and ankles during this time. About June 15, 1875, she was again attacked with nausea, vomiting, palpitation, and dyspnoea, which continued some six weeks, after which she enjoyed tolerably good health until the latter part of December, 1875, when, in getting out of bed, she found that her left arm was powerless, and was very painful for several days thereafter. Power gradually returned, and in about a week she had control of her arm, but the use of it was defective, and sensation was impaired.

About the middle of January, 1876, she was attacked with a severe pain in the right hypochondriac region, which came on suddenly and lasted about two hours; no jaundice followed, but the next day she was paler than usual. On February 1, 1876, she was seized with severe pain in the left leg, lasting some hours and leaving the foot cold and numb, which was relieved after considerable friction had been employed. There was no discoloration of the limb.

When I saw the patient, March 22, 1876, she was in bed complaining of nausea, shortness of breath, and palpitation. She was very thin, which was her habit, her colour sallow; expression anxious; pulse 120, irregular, intermittent, and jerking; without fever. No pulsation was perceptible in either the radial or ulnar arteries of the left arm, the temperature of which was less, and the arm was also much smaller than the right one, about as six is to eight. Her respirations were 30; tongue slightly coated; appetite variable; bowels constipated; urine of sp. gr. 1010, and free from albumen. Menstruation ceased about two years ago. Percussion showed no increase of cardiac dulness. On auscultation, a faint systolic murmur was noticed; the first sound was rather dull and prolonged, the second sound lacked sharpness and distinctness, and sometimes was not discernible. The heart's impulse was strong, not forcible, and was not extended. *Diagnosis.*—Valvular disease of the heart.

March 25. The patient complained of severe pain in the right leg, the intensity of which was in the popliteal space, and continued with more or less severity, when on the morning of the 28th inst., it was noticed that the leg and foot were of a dark-purplish colour, extending to within two or three inches of the knee and forming an irregular line at that portion of the limb. Frictions and other remedial agents were resorted to in order, if possible, to establish collateral circulation, but proved of no

avail. The pain was now confined principally to the popliteal space, and became excruciating upon the slightest pressure being made in that region, though at times the whole limb was painful, the pain being shooting in character. The next day the leg from the knee down was cold, and sensation as well as motion was entirely destroyed, though she complained of its feeling very heavy, and in order to obtain ease, she would sit up in bed with the limbs flexed, the body bent forward with the head resting upon the knees, and in this position she was comparatively free from pain, and could obtain some sleep. It was now noticed, that when the finger was placed just above the superior margin of the sixth rib, and on a line drawn half an inch to the right of the left nipple, the intercostal muscles being very thin, the apex beat [ictus] could be distinctly felt, and within the area covered by the end of the middle finger this ictus was found to be wandering; that is, it would not occur twice in succession in the same spot, and was not influenced by respiration. The leg and foot now became œdematous, and a bulla began to form on the calf of the leg.

April 3. The pulse was 90, but in other respects the irregular action of the heart was the same; the pulse in the left radial artery was detected for the first time, notwithstanding it was diligently sought for every day previously; it was very soft and easily compressible. She complained of difficulty of breathing and a constriction of the chest. Her appetite was very good.

14th. The bulla had gradually increased in size to the capacity of about three fluidounces, when it was accidentally broken by the patient in getting out of bed, discharging a dark-coloured fluid; the same character of fluid continued to ooze more or less for some days, when it became somewhat thicker in quality and of a putrescent odour, making it necessary to use powerful disinfectants in the room.

20th. The heart's action remained the same. The discharge from the leg was now, and had been for several days past, of a dark-greenish colour, and in consistence resembled pus. The toes and a portion of the foot were dried and very hard, and resembled those often seen in the anatomical room. She was comparatively free from pain in the limb during the day, but towards evening it was quite severe, rendering it necessary to give morphia sulph. gr. $\frac{1}{3}$ hypodermically to procure rest. Her appetite was very good.

26th. A consultation was had with Prof. Da Costa. On his attention being called to the peculiar action of the apex beat, he was of the opinion that it was due to a clot in one of the cavities of the heart.

May 1. The pulse was 100, small, feeble, irregular, and intermittent; about 4 o'clock P. M., for several days past, she has had attacks of nervousness which were always accompanied by extreme restlessness, for which ext. valerian fld. ʒss, and spts. æth. comp. ʒj, were given p. r. n. with benefit. She was also now troubled with a severe burning sensation in the eyes. Additional treatment, stimulants and generous diet.

15th. Since the last notes of the case her complexion changed very much, being now of a yellowish hue. The restlessness was now and had been more severe for several days past; the pulse 100, not so feeble as on the 1st inst., the heart's action remained the same; the oozing from the leg was not so profuse, and was now mixed with pus which was profuse, the latter coming from the line of demarcation. She complained of intense pain which was referred to the calf of the limb, shooting to the toes, the latter being dried, shrivelled, and so hard that an indentation could

not be made in them with the finger nail. She seemed quite refreshed in the mornings, especially so after a hearty breakfast. The hypodermic use of morphia was continued every night.

June 1. The patient had been troubled with nausea and considerable headache, and also a burning sensation of the cutaneous surface of the whole body for some days past. The sloughing process at the line of demarcation was now quite rapid, and she insisted that most of the pain, which was almost constant, was below the point of vitality. The irregular action of the heart was the same; bowels obstinately constipated; appetite very good. The bowels were relieved by enemata.

15th. The burning sensation of the skin has been absent for the past two weeks. The pain in the limb was now more severe than ever, and she stated that it extended into the toes, which were as hard as marble. It was evident that the sciatic nerve had sloughed off just above the division of the internal and external popliteal nerves, as the bones just below that point were exposed to view when the pus was removed, and they were necrosed and eroded for a considerable distance around.

July 1. The pain in the limb had not been so severe for the past few days; she complained now of nausea, and eructations of a very fetid odour, resembling that emanating from the diseased limb. The fibula was eroded through, and the tibia could very easily be broken off at the point of erosion. The heart's action was now so tumultuous that the pulse could not be counted, and pulsation of the vessels of the neck was quite perceptible; the patient becoming exceedingly restless towards evening and quite impatient until she received a hypodermic injection of morphia.

13th. Stereoraceous vomiting set in about 4 P.M., and continued at intervals until 7½ o'clock P.M., when she died of exhaustion.

With the kind assistance of Dr. A. C. W. Beecher, who also saw the case several times during life, the autopsy was made twenty hours after death: rigor mortis fairly marked, body considerably emaciated, left arm much atrophied. The suppurative action at the line of demarcation of leg had extended so far into the bone that in manipulating the body, the gangrenous limb broke off through the bone at that point, so that spontaneous amputation was rapidly going on and would have been completed in a very few days had the patient lived. The thoracic cavity was opened, the right pleura contained about a pint of serum, and the cavity extended about one and a half inches above the clavicle of that side, probably due to the upward pressure of the lung when encroached upon by the fluid. In the left cavity but little fluid was found; there were present many old adhesions; the lungs of both sides appeared to be healthy. The heart occupied its normal position, was somewhat enlarged, and the pericardium was adherent to the heart throughout, except where it covered the roots of the great vessels. Section of the heart showed somewhat thin and flabby walls, the right side presented nothing abnormal at the tricuspid valves, but the semilunar (pulmonary) valves were somewhat thickened. The left side showed a large calcareous deposit upon the posterior leaflet of the mitral valve, which extended into the substance of the auriculo-ventricular septum; the valves were thickened and stiff. The aortic valves were slightly thickened, the Aurantian corpuscles contained calcareous matter; the aortic orifice was narrowed by adhesion of a portion of the margins and sides of two of the valves, evidently from inflammatory action; one of the leaflets was fenestrated. In the appendix

aorticæ of the left side was quite a large plate of inflammatory lymphous deposit, which evidently was quite old, as it required considerable force for its detachment. The aorta bore evidences of atheromatous deposit, its inner coat was deeply stained with the colouring matter of the blood. About three inches of the left brachial artery were removed, its calibre was occluded in the upper portion and the vessel generally was smaller than normal; the inner coat was separated from the middle coat and resembled one tube contained loosely inside of another. The femoral artery of the right thigh was removed from about the middle of Scarpa's triangle to a few inches below the profunda, and was found to be smaller in size than normal, but its calibre was not occluded. The inner surface of the vessel was deeply coloured with the colouring matter of the blood, and was very rough, apparently from lymphous exudation. Its coats were separated in the same way as the brachial.

The popliteal artery was removed, and where it entered the gangrenous leg had been spontaneously divided, its coats were also separated like the other vessels examined.

Remarks.—Nutritive changes due to emboli must be a result of extremely rare occurrence, for, after looking carefully over the various medical journals—the *Medical Times and Gazette*, *Edinburgh Medical Journal*, the *Lancet*, and *American Journal of the Medical Sciences*, the reports of the London, Guy's, St. George's, and St. Bartholomew's Hospitals—nothing was found bearing upon the subject, neither do I find reference made to it by Hayden or Balfour in their recent works on the heart.

Equally rare must be the cases of wandering ietus or apex beat, as no reference to it could be found in the literature above referred to, but then this may be accounted for, in part, by the fact that cases are not often seen where the intercostal muscles are so delicate and thin as was the case just recorded.

ART. XXI.—*Pelvic Adhesions in Ovariectomy.* By WALTER F. ATLEE, M.D., of Philadelphia.

I HAVE seen recently a very interesting and very remarkable case of ovariectomy in the practice of my father, Dr. John L. Atlee, of Lancaster, which is worthy of record, as showing the best course to follow when in attempting to remove an ovarian tumour we find the cyst has inseparable adhesions to important organs in the pelvis.

In the well-known works on ovarian tumours and ovariectomy by Peaslee, Spencer Wells, and Dr. Washington L. Atlee, the proper course to follow when this complication is encountered is not definitely pointed out. The reason is, that such cases are rare. In an extended search I have met with the following only:—

In Mr. Spencer Wells's "Fifth Series of One Hundred Cases," in vol. lvi. of the *Medico-Chirurgical Transactions*, among the cases appended in which ovariectomy was commenced but not completed are the following:—

No. 2. Multilocular cyst emptied and partly removed; the remainder adherent to rectum, uterus, and pelvis generally, stitched to the opening in the abdominal wall, which was partly left open for drainage. Died on the tenth day.

No. 3. A burst cyst, and ovarian fluid free in the peritoneal cavity partly removed; the lower segment of the cyst generally adherent behind the uterus stitched to the lower edges of the wound and drained. Died on third day.

No. 5. Peritoneal fluid removed; bunches of the grape-like cysts drawn out. Part of a large cyst firmly adherent in the pelvis not separated, but secured outside by a large clamp. Died eleven days after.

In his *Diseases of the Ovaries*, vol. i. page 220, the same distinguished surgeon relates a case (Case LXXXVI.) where the tumour adhered so closely to the left iliac fossa that it was impossible to separate it safely; the adherent part was secured for the moment with a clamp, and the cyst cut away; before closing the external incision, Mr. Wells transfixed and tied the portion of cyst which had been left adherent to the left iliac fossa and sigmoid flexure of the colon, leaving the ends of the ligatures hanging out of the lower angle of the wound. Some time in May (the operation was performed on the 6th of March) the discharge, according to Mr. Teale, was feculent for two days. The ligatures came away May 31st, and after this the patient considered herself as well. She came to London in October, and except a very slight oozing of pus from the lowest point of the cicatrix, appeared to be perfectly well.

In vol. iv. of the *Medico-Chirurgical Transactions* is an article by Mr. Timothy Holmes, on the Surgical Treatment of Suppurating Ovarian Cysts, and on Pelvic Adhesions in Ovariectomy. The author says:—

"Another interesting question in ovariectomy, illustrated by this case, is how to manage cysts which are so adherent in the pelvis that they cannot be pulled away without too much danger. In this instance any persistent attempt to have dissected or torn the mass away from the pelvic outlet would probably have ended in laceration of the ureters or great veins, and might, after all, have been futile. The alternatives are to pull the cyst as far as possible out of the abdomen, and apply a clamp to its neck; or, to apply a clamp temporarily, cut away the cyst, sear the cut edges with the canter, and return the mass into the abdomen; or, instead of the cautery, to use ligatures for the purpose of restraining hemorrhage from the cut edges of the cyst; or, finally, to stitch the edges of the cyst to the wound in the abdomen, and leave the cavity of the cyst exposed.

"I have no doubt of the superiority of the first method when it is practicable; that is, when the neck of the cyst is thin enough to be embraced in the clamp. The internal surface of the cyst is thus brought into contact, and may adhere and obliterate the cavity, as seems to have occurred in our patient. If this does not take place, at any rate the resulting inflammation, during the healing of the wound, will probably exclude the mass from the peritoneal cavity just as effectually as if the edges were stitched to the wound; whilst the plan is free from the dangers incurred by leaving the remains of a suppurating cyst free in the pelvis, and those resulting from the irritation of ligatures in the pelvic cavity. Mr. Wells related a case of this kind, in which the continued presence of the ligatures set up abscess, which burst into the rectum and produced fecal fistula (*Diseases of the Ovaries*, vol. i. p. 220; *Glasgow Medical Journal*, February, 1868, p. 381).

"The case before us was an example of complete, and, I must allow, unexpected success. I expected that when the clamp and pins had been removed a suppurating sinus would be left proceeding from the interior of the cyst which would only gradually dry up, if at all."

The patient, nearly a year after the operation, had remained well; the sides of the sac which had suppurated having united when pressed together, and obliterated what remained of the sac. In this case the sac adhered on the left side so firmly to the brim of the pelvis, that it could not be extracted without too great risk to the iliac vessels and bladder. I would remark here, that Mr. Wells relates his case in such a way that I do not learn that fecal fistula *resulted*. In his case, as told before, he transfixed the portion of the cyst adherent to the left iliac fossa and sigmoid flexure of the colon, and tied, leaving the ends of the ligatures hanging out of the lower angle of the wound; after a time, according to Mr. Teale, there was a feculent discharge *for two days*.

The case of my father, which has been the occasion of this article, I now give in his own words:—

"Early in February, 1876, I was called to see Miss A. M. W., aged 42, tall in stature, and somewhat emaciated, in consultation with Dr. I. M. Dnnlap, of Manheim, in this county. She was represented as labouring under an enlargement of the abdomen, which he supposed was caused by an ovarian cyst. At my visit, to our surprise no abdominal tumour could be found. It appeared that on the day previous to my visit, and after an external examination of the abdomen by Dr. D., she had had a very copious discharge of urine from the bladder, amounting to several pints, and that during the night the abdominal enlargement had disappeared.

"An examination of the vagina discovered the os uteri in the left and posterior portion of the pelvis, barely tangible with the point of the finger, and apparently firmly fixed in that position. The brim of the pelvis was filled with a firm mass, and the fundus uteri could not be felt, nor could I introduce the uterine sound to ascertain its position. An examination, per rectum, showed that all the parts in the brim of the pelvis were occupied by a mass of abnormal matter, firm and unyielding.

"On the 17th February I visited the patient again, and found the abdomen considerably enlarged, especially on the left side, with evidence of fluid on perussion. This fluid was encysted; but within it I found a tumour as large as a cocoa-nut, elastic and firm, into which I introduced a French exploring trocar, and drew off about six ounces of a viscid semi-transparent, yellowish fluid, which strongly coagulated with heat, and also with nitric acid. The pelvic cavity was in the same condition as before. Soon after leaving the patient that evening, she commenced discharging large quantities of urine, amounting to at least seven or eight pints during the night, and the abdominal enlargement again subsided. The urine discharged was free from any trace of albumen. This state of things continued more or less frequently during the months of March, April, May, and June, more especially at and near the time of her menstrual periods. In the mean time the cyst which I had tapped became gradually enlarged, and having no doubt respecting its character as ovarian, preparations were made for its removal on the 20th of July.

The inducement for this was that her health was gradually declining, the emaciation increasing, and exercise and labour of all kinds very fatiguing. She was also extremely anxious for the operation. On that day, assisted by my son, Dr. John L. Atlee, Jr., Dr. Welchens, and also by Dr. Wilson, and in the presence of Drs. Dunlap, Sr. and Jr., Parry, and Mr. Heinitsh, I proceeded to the operation after the usual preliminary preparations. On opening the abdomen in the linea alba to the extent of four or five inches, the cyst wall presented itself, of the usual cream colour and thickness. There were no adhesions between the upper portion of the cyst and the abdominal wall. It was then tapped with a large trocar, and about four pounds of a highly albuminous and viscid fluid removed. In passing my hand down between the cyst wall and abdominal peritoneum, I found the inferior third of the ovarian cyst very firmly adherent to all the viscera of the pelvis, and impossibility of removing it without endangering the integrity of the bladder, uterus, lower colon, and rectum, and also the pelvic bloodvessels. Grasping the cyst firmly, I could have elevated the patient from the table, so intimately did it adhere.

"The question here arose: What should be done? To return the whole cyst into the abdomen and close the wound would, even if the patient recovered from the immediate effects of the operation, entail upon her a continuance of her disease, and necessarily shorten her life. I therefore concluded to bring out as large a portion of the cyst as possible, surround it with the clamp, and cut it off, trusting that by a very careful attention to closing the abdominal walls accurately around the cyst by the interrupted suture, the necessary peritoneal inflammation which would result would seal the peritoneal coat of the ovary to that lining the abdominal wall, and in a day or two seal up the general peritoneal cavity. This was then done, and after the usual attention with compresses and bandages the patient was put to bed. Without entering into details, I will only say, that at no time did any untoward symptoms arise. There was the usual moderate reaction which always occurs in the most favourable cases of ovariectomy. On the 24th of February, fifth day, the clamp was removed, and I then found that the general cavity of the abdomen was completely secured by the union of the surfaces above mentioned. No adhesion whatever had occurred between the opposing surfaces of the membrane lining the interior of the cyst; and there was a very considerable discharge of fluid from its cavity. To lessen this there was a daily application of a saturated solution of nitrate of silver applied to the whole interior surface by means of a bushy camel's-hair pencil, followed by solutions of carbolic and salicylic acid, alternately, as seemed most needed to prevent septicæmia. About this time I was informed for the first time that in November, 1875, while attending to business in Philadelphia, on a cold, damp day, she felt chilly, and stood for some time over a heat-register; soon after which she had a severe chill, followed by high fever and severe pain in the lower portion of the abdomen, back, and thighs, making it necessary to return home. Her legs became so stiff and swollen that she could scarcely walk; had coldness of the lower extremities, while she perspired over the rest of the body. Two weeks after this she had an attack of pleurisy, which lasted two weeks. She then felt a bearing-down pain in the bowels.

"On the 10th January, 1876, she first perceived the tumour in the abdomen, and sent for the family physician, Dr. Dunlap, who continued

to treat her with anodynes to relieve pain, and alterative treatment until I was sent for.

"It was only now that I was able to comprehend the mystery in her case, and the peculiar circumstances connected with the occasional enlargement of the abdomen and its disappearance. She must have had a very serious attack of pelvic cellulitis in November, followed by copious extravasation of coagulable lymph, which sealed all the parts together, as if a pot of glue had been poured into the pelvic cavity. In addition to this I think there must have been a formation of false membrane connected with the surface of the peritoneum, under which there was a secretion of serous fluid, which every now and then was ruptured, and the contents, passing into the general cavity of the peritoneum, were absorbed and discharged by the kidneys. In no other way can I account for the immense discharges of urine (from seven to twelve pints in a few hours) which so frequently occurred. It is also most probable that previous to her visit to Philadelphia in November cystic development of the ovary had already commenced, which, if it did not invite the pelvic cellulitis, was influenced to a more rapid development by it.

"The progress of the case, after the use of the caustic, has been very gradual. By degrees absorption of the lymph effused has been going on, until the viscera of the pelvis have been restored to their normal condition. An examination in the latter part of August showed the uterus in its normal position, and a finger introduced into the bottom of the cyst readily perceived the fundus, which could be freely moved up and down between the opposing fingers. As absorption went on, the cyst-wall gradually became separated from the adjacent parts in the interior of the wound, and was strangulated by ligature and removed.

"She returned home on the first of September, with her health and strength greatly improved, feeling, as she said, perfectly well, except somewhat weak, and entirely free from pain. As the whole of the cyst-wall had not been removed, and occasioned a purulent discharge from the wound, she was requested to visit me once in two or three weeks for further examination. Her last visit occurred on the 31st October, when I found a mass of cyst-wall as large as an egg, which I strangulated with a double canula and wire, and which came away November 2d, leaving the bottom of the wound almost entirely free from abnormal tissue, and the external wound very small and not interfering with her general health."

The study of these cases, I think, will lead to the conclusion that in a case of ovariectomy where pelvic adhesions were very firm, the proper course to pursue would be not to stitch the cyst to the abdominal wound, but to pull the cyst as far as possible out of the abdomen, and apply a clamp, cut it off, and close the wound beneath the clamp with the greatest care. We may trust that there will be union between the opposing peritoneal surfaces; and, whether, as in Holmes's case, the sides of the sac adhere immediately, or, as in my father's case, the process is more gradual, the ultimate result will be entirely satisfactory.

ART. XXII.—*Case of Rabies Felinæ, treated with Woorara and Morphia; Death on fifth day.* By IRA B. READ, M.D., of New York.

ON Sunday evening, July 16, I was called to see Mrs. H., German, æt. 32. I found her in a very nervous and excitable condition, but perfectly rational. The pulse was 112; temperature 102°; tongue moist and clean; respiration normal; slight perspiration. The eyes were glaring, and there was an expression of countenance denoting extreme anxiety. There was great hyperæsthesia of the face and neck, as shown by the irritation caused by the flies which swarmed in the room, and by any current of air that passed over her. She said she "did not feel sick, but she could not eat or drink, and she was afraid." She refused to make any attempt to swallow either food or drink; and the mere mention of water would cause her to start back with a wild expression of countenance, and, with the lips tightly closed, there would be a spasmodic action of the muscles of deglutition for a minute or two, when she would become more quiet. When a cup of water was offered her, she would spring forward and dash it to the floor, complaining that it was not right to give it to her when we knew she could not swallow it.

On further inquiry I learned the previous history of the case, as follows: On Thursday, June 15, while weeding in the garden, a cat had sprung from the weeds and fastened its teeth in the woman's neck. She was very much frightened, and immediately proceeded to the nearest physician, who cauterized the wounds, which healed rapidly. During the succeeding three weeks she experienced no inconvenience, either mentally or physically, from the bite; but, during the week previous to my seeing her, she had been rather melancholic, "downhearted," as her friends expressed it, losing her appetite, and frequently expressing her fears as to the result of the bite of the cat; and finally, on Saturday evening, July 15, she had refused to eat or drink, and, as I was told, presented much the same appearance as when I first saw her.

At this stage of the investigation I learned that the woman had that day been seen by another physician, and I refused to have anything further to do with the case till he could be consulted, or till they could tell whose services were required. The next morning I was sent for to take charge of the case, and found the patient in about the same condition as on the night before. The pulse was 96; temperature 102½°; respiration quite normal, but slightly laboured—which I may here say continued to be the case throughout the course of the disease. At 10 A. M. of the 17th, I gave hypodermically ten drops of Magend. sol. morph. sulph., and also gave per rectum ʒss hydrate of chloral. At 5 P. M. I injected twelve drops Magend. sol., and also ten grs. chloral. Pulse 130; temperature 103°. There was marked increase of the ærophobia, and great restlessness. The right arm and leg were in constant motion. The left side was comparatively quiet, but sufficiently active to show there was no paralysis. In her right hand she held a handkerchief, with which she was continually brushing away the flies, and would not suffer any one to do this for her, as she was afraid too great a breeze would be produced. I noticed that she often used the handkerchief when there was no fly near her, but, if one did light on her face, she was much more decided in her movements, and the muscles of the face would act spasmodically, and the head turn

with a quick jerky motion from side to side. At 7 P. M. I found her in the same restless condition, and I injected fifteen drops Magend. sol. She could swallow nothing, and had the same dread of water as before. She complained of great thirst, and piteously asked if I thought she "could swallow by to-morrow." I induced her to try to swallow a little "sarsaparilla beer." As I approached her with the glass, she watched it steadily, as if making up her mind to make the attempt at all hazards. Suddenly she grasped the glass with both hands, carried it hurriedly to her mouth, and with a great shudder and a deep spasmodic inspiration she gulped down one swallow. But the effort was so great she would try no more.

At 9 A. M. of Tuesday I found her with all the symptoms somewhat exaggerated. Pulse 92; temperature 103° ; tongue slightly coated. Had no sleep during the night. Complained of being very warm. Bears light well, and has at all times. Having lately read in the *American Journal* Dr. B. A. Watson's report of a case of hydrophobia successfully treated with woorara, I determined to try it. Having after considerable search obtained some, I dissolved some of it in water and alcohol, and at 11 A. M. I injected $\frac{1}{12}$ gr., the pulse being at 140 and the temperature 104° . At 3 P. M. the pulse was 160; temperature $102\frac{1}{2}^{\circ}$. She drank a little of the beer, with but little effort, and said it tasted good, and expressed herself as confident that she would find relief. There was no abatement of the movements of the right arm and leg. I now injected fifteen drops Magend. sol., and soon after $\frac{1}{12}$ gr. of the woorara. At 6 P. M. the extremities were much below the normal temperature, a slight departure from which I had noticed on my previous visit. The pulse and axillary temperature were the same as at 3 o'clock. She now drank more of the beer. This was done with some difficulty, but was attended by no convulsions. I now again injected $\frac{1}{12}$ gr. woorara. Her husband presently came in drunk, which excited her very much, and it took some time to get her quiet. At 8 P. M. the pulse is 130; temperature not recorded. She is much more quiet. Has taken a little beef-tea and more of the beer. The pupils are much contracted, probably from the influence of the morphia. I gave her twenty grains chloral, and left the following to be given at 1 A. M.: chloral, gr. xx; woorara, gr. $\frac{1}{12}$; morph. sulph. sol. mag. gtt. xij.—M.

The next morning I learned that she had rested well till 12 o'clock. At 1 the medicine was given, also more beef-tea and beer. She was rather restless till morning. I saw her at 7, and found the extremities cold, pulse feeble, and the patient evidently dying. She could not swallow, and refused to make any attempt. Up to within ten minutes of her death, which occurred about 10 A. M., the muscles would twitch if a fly lit on her face, or a current of air swept across it. She died without a struggle or spasm.

The case was seen by three other physicians, Drs. Gregory, McLean, and Rhodenstein, who all concurred in the diagnosis of hydrophobia, to which conclusion I was led by the symptoms as herein given. In taking a retrospect of the case, we find, first, the bite of a cat, not known to be rabid, as it was killed soon after, but presumably so; then, after the lapse of three weeks, the patient became melancholic, with loss of appetite, and a fear of the result. All this, to be sure, might be the result of over-wrought nerves and a hysterical condition. But, to my mind, the

result in this case proves something more than hysteria. There was the constant dread of water and food, the extreme hyperæsthesia of the face and neck, and the ærophobia. There was a constant tendency to, and a moderate exhibition of, spasmodic action of any muscle of the body that was called into use. But during the whole period of the disease there were none of the terrible convulsions which I have seen in other cases. While some, as Dr. Watson's case, for example, will eat and drink during almost the whole course of the disease, my patient from the first refused to take anything into her mouth, with the exception of the beer and beef-tea already mentioned. There was a constant accumulation of mucus in the throat, which increased on the third and fourth day. This was nearly all wiped from the tongue with a handkerchief or ejected on to the floor.

In the record of this case, I do not find much that is different from other cases of hydrophobia. It is in the consideration of the treatment that the interest lies. If we have found in woorara a remedy for this dreadful disease, then indeed we are called on to rejoice, and render immortal the name of him who first discovered its power. I have recorded the case because it seems to me that the unsuccessful as well as the successful results should be given in making up our estimate of any course of treatment. Then, under due consideration and fair and friendly criticism, the want of success will attach to the physician or to the remedy, as is right. In this case some temporary benefit seemed to be derived from the action of the morphia in producing a quiet state. But this seemed to have no control over the aversion to food or liquids; and it was only when the patient seemed to be under the influence of the woorara that she could swallow without much difficulty. And it seems to me that the subtle and powerful influence of that poison which produces the condition known as hydrophobia is to be met and overcome only by some agent equally subtle and powerful. Have we this agent in woorara? I should certainly give it further trial if called on to meet other similar cases, giving it in slightly increased and more frequent doses.

[A case of hydrophobia resulting from the bite of a cat is related by M.M. J. L. Prevost, Chief Physician to the hospital at Geneva, and Tolo, the interne of his service (*Gaz. Méd. de Paris*, No. 26, 1876). The patient was treated by intravenous injections of chloral, which afforded relief to the sufferings, but did not prevent a fatal termination. Cases of hydrophobia produced by the bites of cats have been published by Balzac in his *History of Hydrophobia* (Tours, 1810); and more recently by M. Bouley (*Dict. Encyclop.*). See *Gaz. Hebdom.*, Aug. 11, 1876.—Ed.]

ART. XXIII.—*A New Anthropometer, or a simple Apparatus for Determining the Inequalities of the Length of the Legs.* By B. F. GIBBS, M.D., Surgeon U. S. Navy, and Fleet Surgeon South Pacific Station. (With two wood-cuts.)

IN a case of fracture of the femur, on board of the U. S. Flagship "Richmond," at Taleahuano, Chili, on the 7th of March, 1875, and which was treated on board ship, there was some shortening. The results of the use of the tape-measure were unsatisfactory. The man was coloured, and no marks could be made on the skin with the nitrate of silver, at the points usually selected for comparative measurements of the two limbs. The difference given by the tape was a half of an inch, which was contradicted by the man's very steady walk. As I had taken much pains in the treatment of this case, and had used the ordinary Liston's splint, in connection with canvas stretched over a wooden frame for handling the patient, I was desirous of finding as accurately as possible the exact difference in the length of the legs.

I accordingly devised a very simple apparatus for measuring the inequalities of the length of the legs, which can be made by any skilful carpenter, and which is fully represented in the annexed diagrams, Figs. 1 and 2. It mainly consists of three parts, viz.: A board one inch thick, five feet long, and twenty-two inches wide; two sheet-iron hooks, E and F, Fig. 1; and a sliding square, C. The board has a longitudinal slit or opening exactly in the median line, one and a half or two inches wide, and beginning at twelve inches from the upper or pelvic end. The back of the boards (as it will be made of two ordinary boards) is supplied with six battens, to preserve the rigidity of the apparatus and integrity of the open slit, and which are represented by the transverse dotted lines.

The transverse piece C is placed so as to be rectangular to the median line of the board, and is screwed firmly to the slide D, which by careful adjustment is made to move accurately in the longitudinal slit. Toward the upper part of this slit there is also another slide, A, to which is attached a small piece of board placed upright, and of the following dimensions, viz.: six inches long, seven inches deep, and one inch thick, and marked B. This is a perineal block which is intended to finish the adjustment of the median line of the pelvis to that of the board.

The hook-like pieces made of sheet- or boiler-iron, figured in the diagram, Fig. 1, as E and F, have a pivotal centre, as represented in the perspective view of the same in Fig. 2, at which point they are secured to the board by a single "wood-screw." The latter figure also shows the iliac blocks, which are cut from a white pine board one inch thick, and screwed to the sheet-iron, the screws entering from the under face.

Of the Irregular-shaped piece, of sheet or cardboard, an outline of which is represented in Fig. 1, there are two, one for each hip. Their dist-

FIG. 1.

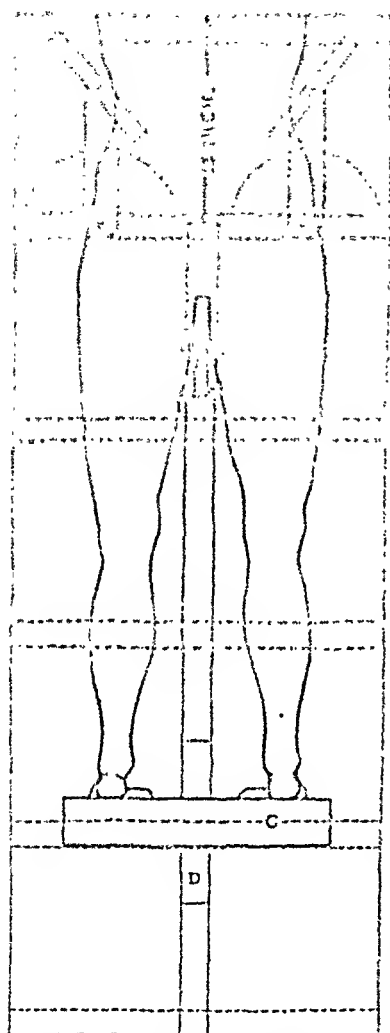
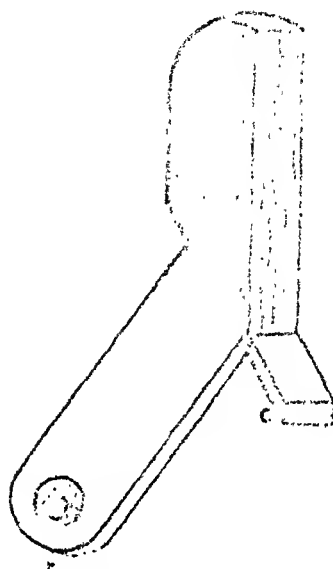


FIG. 2.



iron pieces I have called for convenience iliac hooks, A, B, C, E, and the pieces of wood represented attached to them, A, B, D, in Fig. 2, the iliac or hip blocks. These being attached to the board by the screw mentioned, which is also the fixed centre of a circle, and which is located near the end of the broad part of the hooks (E, Fig. 2), it is evident that the other ends of the hooks, and the iliac blocks attached, describe the circles. The value of the whole apparatus depends upon the establishment of these two

centres. The circles which are produced, with these points as centres, when described on the board with a pair of dividers, must cut each other at exactly the same point in the median line of the board, and which is a simple matter of measurement. The whole of the iliac hook and block, as represented in Fig. 2, would go on the left-hand side of the board, if one were standing at its foot and looking towards its upper or pelvic end.

The broad parts of the iliac hooks are two inches wide and eight inches long. The narrow parts of the same (A, B, C, Fig. 2) are one

inch wide and seven inches long. In cutting these from the sheet-iron, this narrow part, A, B, C, Fig. 2, must stand at an angle of 45 degrees with the broad part, and as represented by the diagram, Fig. 1. The perpendicular edge of the block, B, D, represented in Fig. 2, bears a constant parallel relation with the perpendicular edge of the block on the opposite side of the board. The base of the block A, B, in Fig. 2, is not intended to be as long as the whole length of the narrow part of the hook, because the free end B, C, Fig. 2, in passing beneath the pelvis gives greater solidity to the apparatus in final adjustment. The perpendicular edges of these two blocks are intended to press against the iliac crests on each side, as the body lies in proper position horizontally on the board. Both hooks and blocks are easily made, and adjusted as follows :—

The object to be achieved in attaching the whole thing represented in Fig. 2, to the board above described, is, that the pivotal screws shall be placed in certain points in the board, so that when this part of the apparatus, right and left, shall describe sufficient parts of circles in being moved toward the median line, the iliac faces of the blocks, standing perpendicular to the surface of the board, shall exactly meet at a point in this median line which is exactly equidistant from either one of the screws. Under these conditions, the apparatus is in *perfect adjustment*.

The points at which the pivotal screws are fixed in the diagram, Fig. 1, are six inches from the median line of the board, and twelve inches from its pelvic or upper end. A line drawn through these two points across the board at right angles with the middle line of the board, will mark the first of a series of peg holes, the first two of which are placed a half an inch from the ends of this line, or the outer edges of the board. These holes are continued in a semicircle, made a half an inch apart, and numbered up to 20. The radius of this, a part of a circle, is the distance to the above first peg-hole. These holes are numbered, so that each two of corresponding numbers on either side, shall be exactly the same distance from the median line of the board.

Having now the board with the iliac blocks, perineal block, and sliding square, all of which could be made by a skilful carpenter after seeing first the iron hooks, almost as quickly as it has taken to describe them, we have to discover the application by adjusting the body of the person to be examined. This is done by drawing widely apart the iliac hooks, and directing him to sit on the upper end of the board so that the iliac crests shall be five or six inches below the upper end of the board. With one or two movements up or down, to right or left, done by the person himself, the iliac blocks are easily adjusted so that their perpendicular faces shall press equally against the iliac crests, and if the body is in the median line of the board, the pegs will occupy holes of corresponding numbers on each side, securely fastening the faces of the blocks.

These blocks, in their perpendicular position; will be found to form an angle with the line of the iliac crests of about 30 degrees; so that in no instance can there be a failure in finding a bony point of resistance. The crest-blocks being adjusted, the perineal slide and block is pushed up, which further secures the body in the median line.

We have now the pelvis in a rectangular position, as well as the heads of the femurs and the trochanterian prominences, if the parts are normal. It may just here be as well to meet a possible objection to this apparatus by noting that it is seldom a deformity of the pelvis is sustained in the iliac bones, even in abnormal structures in which there has occurred disease of the bones later in life. In those female pelves which have never been fully developed, the deformity almost always exists in the ischium or pubis, and seldom in the heavier ilium. That distance may be considered as constant in the skeleton, between the upper edge of the acetabulum and the crest of the ilium, as in any other part of the osseous tissues. This constancy is indeed practically admitted by the custom of taking the anterior superior spinous process of the ilium for one of the reliable points for tape measurements in any comparison of the legs.

If the pelvis and heads of the femur are caused to assume, by this apparatus, a perfectly transverse position on the board, they are of necessity in a rectangular position with the sliding square at the lower end of the board, as well as with the lower extremities, if there is no abnormal inequality in the length of the limbs. The legs being now separated so that the heels rest just external to the blocks, represented on the transverse slide, and which places the heels ten inches apart, there will be seen at once any inequality, if such exists. The plantar surfaces being so soft as to yield readily to the pressure of the transverse square, a more perfect comparison of the length of the limbs may be made by having the person to wear a pair of snugly-fitting shoes having the same thickness of soles. The toes naturally fall outward when the feet are placed against the square, but they should be held fixed as nearly at right angles as possible with the line of the leg, so that only the heels come in contact with the square.

A difference of an eighth of an inch can easily be seen with this apparatus. With one more perfectly constructed, having metallic guides, set screws, peg-holes, etc., even much greater accuracy can be achieved. Any one having used this apparatus would be exceedingly unwilling to go back to the guess-work of the tape measurement in which no two people will secure similar results from the same experiment. The statistics of fracture of the femur would at once be more valuable, if the measurements were taken by an apparatus of this description, and the comparative values of the different modes of treating fracture of the femur could then be decided as they only can by a more uniform system of measurement.

The accuracy of this instrument, if carefully constructed, may be further relied on in matters of diagnosis, and more particularly in that of fracture of the neck of the femur. Not a few good surgeons in their professional lives have been puzzled in making a differential diagnosis between fracture of the neck of the femur and dislocation of the hip joint. Nothing would seem easier, and yet fracture of the neck has occurred without shortening or eversion of the foot. Intra-capsular fracture of the neck of the femur is known in one way by observing the trochanter to move on a shorter radius than on the sound side. This is the case whether there be shortening or not. Hence, one of the points in making this diagnosis is to observe whether the trochanter approaches the median line of the body in the direction of the axis of the neck of the femur. The diagnosis in case of impacted fracture is difficult where there is no perceptible shortening, no crepitus, no eversion or abduction. The rectangular position of the pelvis in such cases, when placed on this apparatus, will have exact relations with the ends of the lower extremities, and most extraordinary advantages will be found for determining the existence of this fracture.

The adjustment for this purpose is easily made by properly placing the body on this apparatus so that there will be a correspondence of middle lines, and the trochanters shall be equidistant from the centre. If in the measurement with a carpenter's square and rule, there should be seen a marked difference in the distance of the trochanters from the median line, or the same thing from the outer edges of the board, the existence of a fracture would be clear. It would show that there was a shortening of the neck of the femur, and this without any shortening of the length of the limb.

It was exactly this kind of measurement, as a means of diagnosis, which was brought forward at a meeting of the Royal Medical and Chirurgical Society, Dr. C. J. B. Williams in the chair, and published in the *Lancet* for 13th of February, 1875. A paper was introduced by Mr. Thomas Bryant on the diagnostic value of the Ilio-femoral Triangle in cases of injury of the hip in impacted fracture, and in interstitial absorption of the head of the femur. This paper set forth the means of constructing this right angled triangle. Its reliability as a means of diagnosis seemed to have been in direct proportion to the accuracy with which a line could be let fall perpendicularly from the anterior superior spinous process of the ilium, to another line which was practically drawn from the great trochanter of one side to that of the other. The outer ends of this transverse line, on each side, between the intersection of these perpendiculars and the trochanteric processes, if there were found a normal condition of the parts, should be found equal. Of course the two remaining sides of the two triangles should be equal. The proof of an abnormal condition of the parts is decided by this test,

when there is found a difference in the length of the base lines above referred to. In healthy adults, Dr. Bryant found the normal length of this base line two and a half inches, and in cases of impacted fracture, it might be from one-half to one inch less.

The least reflection it seems to me ought to show that all this triangulation of the surgical region is attended with great uncertainty when performed by unskilful hands, and even with the greatest accuracy, the same person would not probably secure the same results upon two consecutive trials on account of the uncertainty of the "fixed points." No skill is required to fix the pelvis on the apparatus in hand, and the same results can be secured consecutively with very little care, as the rectangles formed are purely mechanical.

The careful admeasurement of a number of sound men with a view of testing the normal symmetry of the two sides resulted in showing the perfect accuracy of my rather crude apparatus. When the pelvis was placed in position, the sliding square showed no difference in the length of the limbs. This was a multiplied test for the instrument. On the other hand, the case of fractured femur, mentioned at the beginning of this paper, showed that the treatment had resulted in shortening of a little over one quarter of an inch, instead of one-half inch, as three different surgeons had concluded from the most accurate tape measurement. In conclusion, I would recommend surgeons who have occasion to use this kind of anthropometry, to prepare this rigid apparatus, and use it in preference to the tape measurements, made from badly defined anatomical points.

ART. XXIV.—*Description of an Apparatus devised by Dr. Thomas G. Morton for Measuring any Irregularity in the Length of the Lower Extremities.* By STACY B. COLLINS, M.D., Assistant Surgeon of the Orthopædic Hospital, Philadelphia. (With a wood-cut.)

IN attempting to accurately estimate the shortening which may take place after fracture, coxalgia, etc., it seems necessary to have—First, a simple instrument that can be used on a patient in bed without disturbing any applied apparatus. Second, to have it of material which cannot be stretched. Third, to have both limbs measured from one fixed point, thus avoiding inaccuracies resulting from obliquities of the pelvis, differences in height of the iliac bones, and similar causes. Fourth, to have an instrument that not only shows the inequality, but accurately measures it at the same time.

To meet these requirements, Dr. Morton, one of the surgeons of the Pennsylvania Hospital, introduced into that institution several years

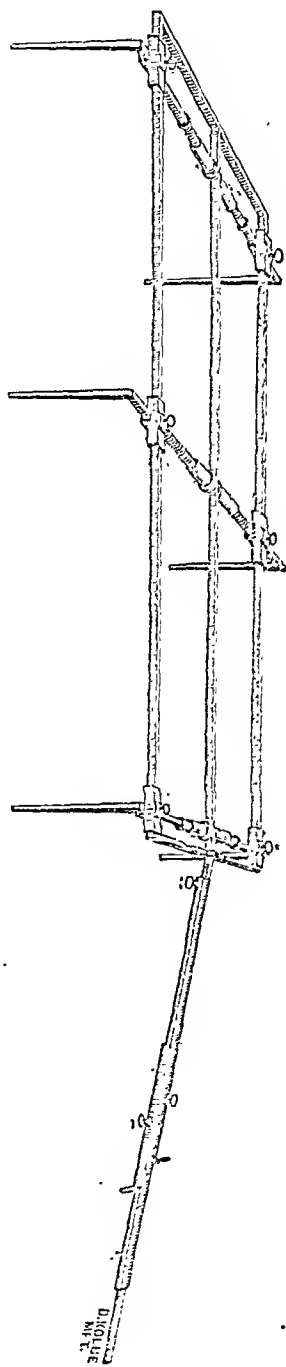
since an apparatus which, with some late improvements, I shall now describe.

It consists of two parts. First, a frame with movable arms, intended to hold the body and legs in exactly the same right line, or, in other words, to make the patient lie perfectly straight; and, secondly, a measuring rod extending from this which passes between the legs, and by means of two short arms touches the internal maleoli at exactly the same relative point at the same time on both sides. When this is done the measurement is accomplished, as a scale on the extended rod at once shows and records any existing difference. (See accompanying figure.)

The frame consists of three small steel bars, each three feet long, lying parallel to each other, and joined at the ends by means of two steel cross-bars at right angles to the others, and nine inches long. This makes a rectangular frame nine inches by thirty-six inches, and divided into two equal parts by the third long bar running longitudinally.

From each side of this frame three arms extend, which, when it is in position on the person to be measured, drop perpendicularly, and by means of a right and left hand serew, held in position by the central bar, can be extended or contracted through brass boxes playing on the outside bars, so as to grasp the body firmly.

The boxes through which the arms run can be moved along the frame so as to clasp the person at any desired point, or in the case of children, allow all the arms to be moved toward one end, thus practically shortening the frame. It is evident that if this apparatus is laid on the body, and the arms screwed up so as to hold it tightly under the armpits, at the hips, and about the knees, any lateral motion is impossible, and the body is held immovably straight. This is necessary, because we have found from many experiments that the slightest deviation from the straight line at once produces an apparent shortening in the limb opposite to the side to which the body is bent. A hinged bar drops from the centre of the lower end of the frame, and extends between the legs. Over this runs another bar which can be pushed up or down as the length



of the legs requires, and held in any desired position by means of a screw at the top. From either side of this outer bar extend short arms, which by means of an elbow with a long fenestra fitting on a steel button can be moved for a short distance up or down, a screw forming the top of the button allowing it to be fixed firmly at any spot, while small pointers, attached to the arms, and sliding up and down with them, run over a scale on the upper face of the outside bar, and show any existing shortening to the one-sixteenth of an inch.

The manner of using this apparatus is sufficiently simple, and when it is carefully made all sources of error (save possibly that from an actual attempt to deceive) seem to be eliminated.

Let us suppose the case of a patient lying in bed with extension applied. We don't wish to get him out of bed or disturb the apparatus, at the same time we are desirous of knowing whether we have sufficient weight applied, and the limb accurately adjusted in length. The clothes are turned back, and the frame is placed over him, so that one pair of arms elaps him under each axilla. The second pair firmly holds his pelvis a little below the iliac crests, while his legs are strongly pressed out on each side, above the knees, against the third pair of arms, which are approximated so as to allow about two inches between the ankles. Now the sliding bar is moved down a convenient distance, and one of the small arms is brought against the lower edge of one malleolus, and the other is moved upward or downward into a corresponding position on the other side. The body is now held immovable, any shortening can be at once diagnosed, and its amount read from the scale without further trouble.

ART. XXV.—*A New Method of Double Staining.* By W. F. NORRIS, M.D., Clinical Professor of Ophthalmology in the University of Pennsylvania, and E. O. SHAKESPEARE, A.M., M.D., of Philadelphia.

THE great progress made of late years in minute anatomy is largely due to the successful use of new reagents, which, having special affinities for certain tissues or parts of tissues, by their action upon them, produce such changes of consistence and of colour, as to give us an optical dissection or separation of them from surrounding tissues, and thus enable us minutely to study their distribution and structure. The uses of nitrate of silver in the study of the lymphatic system, of perosmic acid in the study of the retina, and of chloride of gold in the study of the nervous system, are striking examples of the above assertion, and are familiar to all practical microscopists. It was, therefore, with great interest, that during the past

year we read a "technical notice" from the pen of F. Merkel, on a new method of double staining. The author, by using a mixture of indigo-carmin and carmine, found, that in sections of brain, "everything was coloured red except the marrow sheath and the red blood corpuscles, the former being usually coloured blue, and the latter green." He recommends this fluid for tracing out the roots of nerves, but laments that he could only obtain this colouring of the blood corpuscles in the brain substance, "and that in other organs they either are not coloured at all, or very faintly and irregularly." He found, however, that the mixture was also advantageous in the study of ossification; all fully developed bone staining blue, while everything else coloured red—"it shows beautifully how even ossifying osteoblasts colour red, while in the transition to older bone substance gradually, and at first, indistinctly, the blue colour comes out."

Encouraged by such brilliant results, we endeavoured to use the same reagents, and after repeated trials have adopted another mixture of the same colouring agents which differs essentially from that of Merkel, in that it works uniformly and readily in all tissues of the body, and after a year's trial we confidently recommend it to our brother microscopists.

We will first give the formulæ for its preparation, detail the manner of using it, and then describe some of the results in various tissues of the body.

Red staining fluid.

Carmine 5ss.

Borax 3ij.

Distilled water f3iv.

Blue staining fluid.

Indigo-carmin 3ij.²

Borax 3ij.

Distilled water f3iv.

In each case the ingredients are thoroughly mixed by trituration in a mortar; after standing the supernatant fluid should be poured off and preserved for use. The sections, when cut, should, if the specimens have been hardened in either bichromate of potassa, picric acid, or chromic acid, be thoroughly washed in water until that fluid ceases to be tinged with the hardening agent;³ they should now be placed for a few minutes in alcohol, and then be immersed from 15 to 20 minutes in a mixture of equal parts of the red and blue fluids, afterwards transferred without washing to a saturated solution of oxalic acid, and allowed to remain in it rather less time than in the staining fluid. When sufficiently bleached, the sections should be washed in water till every trace of oxalic acid is removed, for its presence impairs the brilliancy and permanence of the double staining.

¹ Anatomische Untersuchungen aus dem Anatomischen Institut zu Rostock, 1874, pp. 98-99.

² So-called Indigo-carmin is really a sulphindigotate of potassium. Its chemical formula is $C_8H_4NOSO_2OK$.

³ Immersion of the sections in alcohol immediately before staining is not essential to the success of the process, but we think renders the colouring more uniform.

Previous staining of the tissue with carmine in the ordinary method, does not prevent a successful double staining by subsequent immersion in the mixed fluid. Sections stained in the manner above described are best mounted for permanent preservation either in balsam or damar.

Connective Tissue.—The wavy fibrillæ of dense connective tissue, as found in tendons, in the dura mater, etc., stain blue, while the nuclei on and between the fibres stain red. The cells of the inter-muscular connective tissue stain red, and their processes either remain uncoloured or present a faint tinge of the same colour.

Cartilage.—Hyaline cartilage shows a blue parenchyma with imbedded cells, which, with their nuclei, stain red. Exceptionally, however, we found the protoplasm blue, with a red nucleus and blue nucleolus.

Bone stains in a manner similar to cartilage, the osseous lamellæ colouring blue, while the cells lying in the lacunæ are red, and the cells of the marrow stain apple-green.

Teeth.—Sections of the jaw and teeth of the white rabbit, decalcified and hardened by immersion in a saturated solution of picric acid, when stained by this process, present a most variegated and brilliant coloration. The cells of the pulp cavity stain red with a slight tinge of blue, their nuclei deeper red, and the odontoblasts between them and the dentine appear as long green cylinders with red nuclei. The dentine itself is bright red slightly tinged with blue, and the prisms of the enamel take a bright apple-green colour, while the intervening substance has a delicate reddish tinge.

Striated Muscle.—Each primitive fibre of striated muscle appears under a low power as a stripe of blue-green colour, sometimes with predominance of one colour, and sometimes of the other. Under a higher power the sarcolemma shows of a faint bluish tint with red nuclei, while the sarcomeric elements are blue-green, and the intersarcomeric material sometimes of a faint reddish hue, and sometimes of a faint blue-green. In embryonal tissue, the latter usually stains pink. The cells of the inter-fibrillar connective tissue stain, with cell contents and nuclei red, and the processes, if they are coloured, exhibit a fainter shade of the same colour.

Unstriated Muscle, in masses, appears of a bright apple-green or greenish-blue; examined with a higher power, the protoplasm of the cell only is seen to be of this tint, while the nucleus is red, and the nucleolus, where it does not appear as a mere black spot, shows a blue colour.

Bloodvessels are very beautifully demonstrated by this new method of staining. In many parts of the body, particularly in the central nervous system, the staining of the small vessels is such that under a low magnifying power an appearance of a complete vascular injection is presented. If there happen to be a natural injection in areas more or less extended, the latter offer a most beautiful example of variety of colour, and at the same time a very desirable degree of differentiation of structures. The red blood disks crowding the lumen of the vessels are usually of a strong apple-

green colour. The nuclei in the capillary walls are bright carmine, the wall itself having a slight tinge of bluish-purple. The connective fibres adjacent are stained a deep blue. The connective tissue nuclei are everywhere a brilliant red, as are also the nuclei of the lymph corpuscles, whether they be within or without the bloodvessels. The elements of vessels of larger calibre stain as they do in other tissues. Using a medium-sized artery for illustration, the endothelium of the interior shows the nucleus red, and cell-contents a scarcely perceptible tinge of blue which is most distinct where the plate is seen in profile. The so-called elastic or limiting layer of the intima stains blue, as do also the elastic plates and fibres between the different laminae of the muscular or middle coat. The nucleus of the unstriated muscle cell colours red, and the cell-contents, blue-green. The vasa-vasorum and the nervi-vasorum stain as these structures do in other locations. The same is true of the fibrous bundles, elastic fibres, muscle-cells, and connective tissue corpuscles of the adventitia.

The skin, after hardening by means of picric acid or Müller's fluid, in thin sections, is a brilliant object. The corium, with its vessels and nerves, its cellular, adipose, and muscular tissue, scattered through a purely fibrous groundwork, displays all these different structures in the manner indicated for each one of them elsewhere. The epithelium of the surface is usually tinted in the following manner: The cells of the deep columnar layer have their nuclei reddish, and their cell-contents greenish, if there be pigment; bluish, if there be none. The cells of the mucosa have more red in their nuclei and more of blue in their cell-contents, while the corneous layer usually colours greenish-blue or green.

The hairs and hair follicles are excellently differentiated. The external and middle layers of the hair follicle are purple, with the nuclei of their cells deep red. The hyaline membrane of the follicle is of a light transparent blue. The cellular elements of the outer sheath of the hair are stained in a manner similar to that which characterizes the corresponding layers of the surface epithelium, the amount of red increasing as the root of the follicle is approached. The layers of Henle and of Huxley are observed as one united corneous membrane of a bright blue, or greenish-blue without any mixture of red. Below the position of the ducts of the sebaceous glands, the cuticle of the hair appears reddish, the colour becoming more decided towards the root of the hair. A little above the bulb the cortical portion of the hair is bright green, while the medulla is of a much darker hue. For some distance above the papilla the medullary cells are distinctly seen with bright red nuclei and faint blue, or purplish cell-contents. The cells of the papilla itself have less of the blue and more of the red colouring, while the cells of the cortical portion of the bulb have more of the blue and less of the red. The cells, both of the sweat and sebaceous glands, are very distinct, and have their cell-contents blue or greenish, the nucleus reddish, and the nucleolus sometimes blue.

Nervous System.—The ganglion cells of the spinal cord and brain, with their processes, stain usually purple (mixed blue and red tint). Their nuclei colour red, while the nucleoli in well-stained specimens appear blue. In sections of the spinal cord the marrow sheath colours blue or green, and the axis cylinder red. In longitudinal cuts the latter can often be traced for considerable distances. In the nerves the marrow sheath and axis cylinders stain in the same manner as in the spinal cord. In the optic nerve, however, owing to the extreme minuteness of the axis cylinders, it is difficult to determine their colour. In transverse sections they appear as minute, reddish-black points, surrounded by a green-blue marrow sheath. The connective tissue between the bundles of nerve fibres stains blue, as do also the walls of the bloodvessels, while the nuclei both of the vessels and neuroglia stain bright red.

Owing to the blue staining of the marrow sheath the roots of the cranial nerves may readily be followed considerable distances in the brain and medulla oblongata.

Kidney.—The capsule stains as does the other similar fibrous envelopes. The nucleus of the epithelium lining the tortuous tubes colours red, while the surrounding cell-contents are greenish-blue, approaching to green. In the epithelium of descending arm of loops of Henle, the nucleus is distinct and bright red; cell-contents blue. In the recurrent arm, from the bend of the loop, the staining gradually passes from that which characterizes the epithelium of the descending arm to that of the previously described convoluted tubes. The staining of the epithelium of the collecting tubes differs but little in character from that of the convoluted tubes. There is somewhat less of the green; the cell being less granular, the nucleus is more distinct and of a brighter red. The vessels, blood-disks, and nerves stain as in other tissues. The general picture presented by a low magnifying power is very striking. The glomeruli appear as purple islands in a sea of bluish-green, which is checkered irregularly by the purplish lines which represent the capillary network.

The Liver.—The capsule and its projections into the parenchyma of the glands take a staining similar to that which has been already described for fibrous tissues in general. The bloodvessels are well seen, even the delicate wall of the finest radicles of the hepatic veins, with its alternate nuclei, is easily recognized. The epithelium of the gall-duets, from the ductus interlobularis to ducts of the largest lumen, are very distinct; the nucleus red, and the cell-contents blue or bluish-green. The gland cells of the lobuli stain much like secretory cells elsewhere, with bright-red nucleus, and cell-contents blue or greenish.

The Spleen (of the white rabbit).—The fibrous elements of the capsule are stained as usual; the smooth muscular elements have their rod-shaped nuclei red, and their nucleoli perhaps blue, although the latter point is difficult to determine. The trabeculae traversing the spleen pulp, consist-

tumour which was taken from her was the uterus. I told Mr. S. that I could do nothing more for his wife than to relieve her of the leucorrhœal discharge, and for which I prescribed some powders of alum and sulphate of zinc to be used in vaginal injections.

There were some points of rare interest observed in this case, one of which was the freedom from severe bleeding until a month after the miscarriage, and which was suggestive of the production of inversion a considerable time subsequent to the premature labour. Leblanc, referred to by Thomas, and mentioned by Courty,¹ cites a case of inversion reduced with facility very soon after labour, and which was reproduced ten days afterward, and restored with difficulty. It seems to me, as Thomas observes, quite impossible to admit the occurrence of inversion of an undilated uterus; and that pregnancy, or hydrometra, or retained menses, or an intra-uterine fibroid, or some other similar dilating cause, must previously exist. Thus is explained the occurrence of inversion at variable intervals of time after pregnancy, or in women who have never been pregnant. When inversion is due to a fibroid tumour, as Courty² very properly observes, such a tumour, or a polypus, with or without pedicle, is the more readily mistaken for inversion, as each is capable of causing it, and thus complicate the inversion. But it is well known that the diagnostic signs of a fibroid or polypus are usually sufficiently manifest if the proper exploration is made. By the aid of sponge-tents the interior of the uterus can be explored for small intrauterine fibroids. With a No. 6 gum-elastic catheter, with a wire in it, and used in the manner Sims has pointed out, the uterus can be effectively explored for the largest fibroids. If the tumour be a polypus, and occupy the vagina, by the aid of the common uterine probe, and conjoined manual and digital examination, fibroids or polypi may nearly always be distinguished from inversion.

On practising the bimanual exploration on Mrs. S., had I possessed no knowledge of her antecedent history, and carelessly, as has often been done, confined my examination to a mere digital exploration, her condition would have remained undiscovered. There was, however, no peculiar merit in resorting to the bimanual examination; it is an omission not to do it. Had this examination been ever so carefully made, and without a knowledge of her previous history, I should have been liable to mistake her case for congenital absence of the uterus. Five or six years ago I was invited, with the late Prof. J. C. Nott, by Prof. Isaac E. Taylor, of New York, to examine at his office a fine-looking young woman, with every external appearance of splendid physical development, who had congenital absence of the uterus, and who presented very much the same degree of rudimentary development of the cervix that was found in the case of Mrs. S. after the loss of her uterus, but without, however, the patulous os and indurated cervix.

¹ *Maladies de l'Uterus*, etc. Paris, 1866, p. 804.

² *Op. cit.* p. 793.

Mrs. Hattie S., æt. 28, living a few miles from Denver, accompanied by her husband, consulted me at my office, on the 25th of last July. Mr. S. remarked that his wife had long been a sufferer, and had undergone much treatment for disease of the womb, and been subjected to two or three operations on this part, and that unless I thought I could cure her, he did not wish me to undertake her case. I assured Mr. S. that I endeavoured to practise my profession conscientiously, and was indisposed to make hasty promises of cure, especially in uterine diseases. This led to a few questions, and a digital and bimanual examination of the pelvic organs, and a recognition of her condition, which was further explained by a more detailed account of her previous history.

Mrs. S. menstruated at twelve years of age, and at thirteen was married. Her husband was killed a week after her marriage. Five and a half years afterward, she was married to her present husband. About six months after her second marriage, and before coming to Colorado to live, she had a miscarriage at the fourth month; and she got up within three days after her sickness. It was not until a month afterward, that she noticed blood to flow freely from her, and then she said, "it flowed all the time, and very badly, and continued so more or less for four years." She came under the observation of a number of Denver physicians, one of whom was Dr. R. G. Buckingham, an eminent and much respected physician, and our present mayor. In 1868, Dr. F. J. Baneroft, a prominent physician of Denver, and Dr. A. L. Justice, formerly a practitioner of this city, attended her. Dr. Baneroft informed me to-day, that he and Dr. Justice diagnosed an intra-uterine fibroid tumour, having a large pedicle which was attached to the fundus, and that they constricted the pedicle with silver wire by means of a double cannula. He also remarked that the fibroid sloughed and came away in small pieces a few days afterward; but that a meddling nurse repeatedly pulled at the ligature, and caused inversion of the uterus. He further stated that very soon afterward, another physician was called to attend the case. The patient stated that this physician, and to whom Dr. Baneroft alludes, placed a loop or ligature of wire or thread around the tumour and strangulated it, and that something came away. Finally, about the last of August, 1873, another practitioner of this city, with an assistant, used ligatures and instruments, and removed from her what seemed to be a tumour. *From that time she ceased entirely to menstruate; but has had more or less leucorrhœa, and been under treatment for supposed uterine disease up to the time I saw her.*

A digital examination revealed that the os was slightly patulous, and the lips of the cervix enlarged and indurated. Nothing by a mere digital examination led me to suspect a very unusual condition of the parts. However, by the bimanual exploration, I could not detect the body of the uterus in its normal position, or in a position of flexion or version. I passed a catheter into the bladder, and the index finger into the rectum, and found the body of the uterus to be absent; introduced the speculum and found the os to be rather everted; introduced into the cervical canal the uterine probe, which could be made to enter only three-quarters of an inch; removed the speculum, and again introduced the probe into the cervical canal, and the index finger into the rectum, and approaching the end of the probe and the index finger, found in place of the uterus an indurated mass of only slight thickness interposed between the probe and finger. Both she and her husband seemed much astonished when, after my examination, I remarked that she had no womb, and that the supposed

REVIEWS.

ART. XXVII.—*A Practical Treatise on Materia Medica and Therapeutics*. By ROBERTS BARTHOLOW, M.A., M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, and formerly Prof. of Materia Medica and Therapeutics in the Medical College of Ohio, etc. etc. 1 vol. 8vo. pp. 537. New York: D. Appleton & Co., 1876.

A RECENT English review of the Memoir of the late Norman Macleod, D.D., commences thus: "This"—the Memoir—"is a really good book, and, even in its present shape, a popular book, which does honour to its subject, and to its author, in their several degrees. It is, however, so good, that we wish it were made better." Similar language may be justly applied to the treatise of Dr. Roberts Bartholow on *Materia Medica and Therapeutics*, which lies before us. It is so good that it ought to be better, and we wish that it were made better. The merits, which give to it a high place among works of the class to which it belongs, and which justify the wish, if not the demand for greater excellence than it now possesses, will be apparent as we proceed.

Works on *Materia Medica and Therapeutics* have multiplied so largely within the last few years, that we are compelled to inquire into the reason or necessity for their increase; and to demand of each new book, that treats of this subject, a justification of its appearance. When Rufus Choate was asked by a young lawyer, fresh from the lectures of Story and Greenleaf, if there was any chance for a new-comer among the crowded competitors of the Boston or New York bar, the great advocate replied: there is always room on the front seats. So there is always room for new books on the front seats of our libraries. We welcome to these seats every new-comer that is worthy, and gladly place him on shelves reserved for the elect, or in the niche which holds our favourites, inspirers, and instructors. At the present time an unusually cordial welcome awaits any new book on *Materia Medica and Therapeutics*, that comes to the profession freighted with recent acquisitions and needed knowledge. If the new claimant only presents us with traditional opinions and traditional superstitions, if he only serves up a re-hash of old views in new covers, yesterday's baked meats on to-day's fresh plates, the more sternly he is rebuked by that neglect of his book which is its severest condemnation, the better. If, on the contrary, he has anything to offer which is not only new, but important, his work will be heartily welcomed, however great and imposing may be the crowd through which it has to make its way. Dr. Bartholow unhesitatingly claims for his book a place among the second of these two classes. He says:—

"It may well be inquired why I have ventured to add a new book to those already existing in this department of medical knowledge. A belief, which I trust will not be regarded as egotism, that I have earned the right to address the medical profession, has moved me to the preparation of this work. Several years a teacher of *Materia Medica and Therapeutics*, I have necessarily

Prof. Willard Parker's case of inversion mentioned by Thomas, which occurred during a violent effort in rolling ten-pins, and which was mistaken for polypus, and which, after removal, proved to be the uterus, with its tubes and ligaments, was not only an instructive warning against possible errors of this kind, but also shows the suddenness with which inversion may occur even years after pregnancy. Not less instructive was the case of Prof. Budd, of New York, an eminent and skilful gynæcologist, also mentioned by Thomas, and who was fully alert to the importance of not mistaking a partial inversion for polypus, yet by error removed one horn of the uterus with a part of the corresponding Fallopian tube and ligament, for a supposed intra-uterine polypus.

Formerly, removal of the uterus was much practised for inversion of this organ, but in this country at least the intentional extirpation or removal of the uterus for inversion has become quite exceptional, and been replaced by more conservative methods. The procedures of Tyler Smith, of White of Buffalo, of Noeggerath, and especially of Thomas, of New York, are well known. Marion Sims, a decade ago, in his work on Uterine Surgery, p. 134, remarked, in alluding to the success attending his own efforts and those of others, at restoration of the uterus, that he would hesitate a long time before removing another inverted uterus. So that the merit of success in a case of this kind, which is procured at the price of depriving a young woman of one of the most important organs of reproduction, would not justify a deliberate removal of the uterus for inversion, without repeated and intelligent trials of the known methods of reduction. Courty's method is well worth essaying, but is not so extensively known as that of White or Thomas, but is briefly described by the writer in a review of Courty's work, and is to be found in the number of the *American Journal* for January, 1872, p. 157.

An interesting question may arise regarding one of the modes of the mechanism of inversion; and which is, How far will pressure on the fundus during labour, to facilitate expulsion of the child, aid in causing inversion? I have always regarded this pressure, judiciously practised, as an invaluable aid during manual or instrumental delivery; and Barnes and others make favourable mention of it. Recently I had a case of partial inversion immediately following the expulsion of the child; the extreme shortness of the cord, together with pressure on the fundus during the last and rather ineffectual contractions of the uterus, were the cause. The uterus was immediately and readily reduced; but there was a tendency to recurrence, and I thought it necessary to give a large dose of ergot, and place the patient for an hour in the postural position on her elbows and knees, before I felt satisfied that the inversion would not be reproduced. To this, it is hardly necessary to add, that proper watchfulness was exercised during the convalescence.

that American medicine attaches more importance to drugs than to other agencies.

We do not wish to depreciate the value of drugs as remedial agents. They hold an important place in therapeutics from which they can never be dislodged. They are not, however, the sole, not even the chief reliance of the physician. They are auxiliaries to other and more potent forces, whose subtle influences, unperceived and unrecognized by the unintelligent and the vulgar, are often decisive of the issues of life and death. Every physician acknowledges the power of these agents, and, as far as it is possible for him to do so, utilizes them for the benefit of his patients in the hospital and in the sick room. Remedies which possess such an influence, and which the wisest physicians employ to as great an extent as possible, not only ought not to be excluded from works on *materia medica*, but should receive an ample discussion in them. It is not difficult to point out these extra-pharmaceutical remedies, nor to discern their character. The experience of every practitioner makes him familiar with them. Possibly there are physicians who use them unconsciously. They may be distributed into three classes. The first class comprises mental influences, that is the action of the mind upon the body; or, in more precise language, the influence of the cerebral ganglia upon the other ganglia of the nervous system, and through the latter upon the functions and organs, by which physiological and pathological processes are more or less modified. All forms of mental influence belong to this class. They are subjective remedies, and may be appropriately designated as *subjecta*. The numerous works upon the mutual action of mind and body, which have appeared of late years, especially those of Brodie, Feuchsterleben, Maudsley, Bain, Tuke, and others, testify to the physiological and therapeutical power of this class, but most writers on *materia medica* either do not mention it at all, or content themselves with the briefest possible allusion to it. To the second class belong all the circumstances or conditions which surround a patient, and to a greater or less extent affect him as causes of disease, or means of relief. These are known as *circumscripta*, or the patient's surroundings. They are the character, exposure, ventilation, and drainage of the chamber and of the house or hospital in which a patient is placed, and the occupation, clothing, exercise, habits, climate, and other like circumstances that beset him. These are usually called hygienic influences, and are discussed at length by writers on hygiene. They cannot, however, be disconnected from practical therapeutics. They are often the most potent agents, not only in the causation and prevention of disease, but in the treatment of it. The efficacy of change of air in the management of pertussis and cholera infantum, of ventilation and bathing in scarlet fever and typhoid fever are familiar illustrations of this truth. The diet of a patient forms the third great class of remedies. This is technically called *dietetica*. Its physiological importance has always been known. Man must eat, or die. Its therapeutical importance—its direct and intelligent application to the treatment of disease—has only been recognized of late years, and its full importance is not yet fully appreciated. If now to these three classes, all of which eminently belong to the medical material, or *materia medica* of the practitioner, we add a fourth, drugs, or *medicamenta*, we have a notion of the whole territory which *materia medica* properly comprises. *Subjecta*, *circumfusa*, *dietetica*, and *medicamenta* are the four great departments which form the practitioner's complete outfit. This is the

formed opinions as to the kind of information which should be contained in a treatise on this subject. As far as such a course of experiment is practicable, I have demonstrated in my lectures the actions of remedies on animals. I have conducted in my private laboratory many independent investigations, and have contributed in this way, I submit with diffidence, some original knowledge to the subject of therapeutics. The information thus acquired has been supplemented by thirty-two years of clinical experience as a practitioner of medicine. Under these circumstances I am induced to believe that my professional brethren and medical students will hold that I am entitled to a hearing."

This is the language of courageous self-confidence. If there are those who can not applaud its delicacy, there are none who will deny its frankness. Dr. Bartholow does not misjudge his position in using it. He is well known as a zealous student of medical science, an acute observer, a good writer, a skilled practitioner, and an ingenious, bold, though sometimes reckless investigator. His present book will receive the cordial welcome which it deserves, and which the honourable position that he has won, entitles him to demand for it.

The last quarter of a century, and particularly the last ten or fifteen years, have witnessed a marked change in the character of the works on *materia medica* that have appeared during this period, in comparison with those of any previous date. The change is an important and auspicious one, but it is only the commencement of still greater change that is yet to come. The change to which we refer is twofold in character. It concerns, first, the limits or boundaries of the science, which have been latterly greatly enlarged, so as to include many other agencies than drugs; and it concerns, secondly, the method by which the action of remedies on the human system is investigated, and their consequent therapeutic employment.

Until within a recent period, treatises on *materia medica* and therapeutics have been confined almost exclusively to a description of drugs and of their therapeutic application. They have, moreover, been written almost exclusively from a clinical standpoint, and have made very little account of the physiological action of medicinal agents. Illustrations of the truth of this remark abound in the medical literature of this country and of Europe.

Nearly the whole of Pereira's treatise, a monument of marvellous industry and knowledge, is devoted to drugs. The first part of the first volume refers, it is true, to light, air, climate, exercise, diet, mental influence, etc., as agencies which modify the course of disease, and consequently have some therapeutic power; but the account of these important agents is so brief and meagre, that the impression which the student derives from the perusal of Pereira's great work is that drugs are the most important part of the *armamenta medicorum*, and that all other remedies are comparatively insignificant. A similar impression is produced by the study of the *Materia Medica* of Trousseau and Pidoux. Yet the *Clinique Médicale* testifies, from beginning to end, that Trousseau constantly and successfully employed many other agents than drugs in the treatment of disease. In like manner, Oesterlen's work presents us with a discussion of the action and use of drugs alone, and thus indicates that the German school of medicine, like that of England and of France, was not at the time he wrote emancipated from the notion that the physician's *materia medica* was confined to what the pharmacist prepares, and the druggist dispenses. Stillé's admirable treatise resembles, in this respect, the works that we have mentioned of his transatlantic colleagues, and proclaims

world the most complete treatise on the subject, considered from the point of view which we have indicated, that has yet appeared.

This enlargement of the boundaries, or rather of the territory of *materia medica*, which has rendered the science more comprehensive, and at the same time more rational, constitutes only one part of the twofold change to which we have referred, as characteristic of recent progress in this department of medical inquiry. The other part of the change, the second characteristic, which the recent progress of scientific inquiry has developed, and which differentiates the *materia medica* of to-day, not only from that of the distant past, but from that of a past quite near to us, is to be found in the method by which the action of medicines on the human system is investigated, and their therapeutic applications inferred.

In the remote and mythical age of medicine, the sick, and especially those who were afflicted with unfamiliar or unknown maladies, were carried on their beds into the streets, with the hope that some passing traveller might recognize their diseases and suggest appropriate remedies. Such was the origin of clinical observation and teaching. From that early time, rife with superstition, error, and empiricism, down to a recent period, clinical observation has been relied upon as the only source for ascertaining the therapeutic action of remedies, and as the sole arbiter of their therapeutic value. In the trial of the remedial action of medicinal agents, and especially of drugs, it has usurped, or been allowed to assume all the functions of counsel, expert, jury, and judge. Not only has this been done, but the remedies employed have more often been selected by whim, superstition, or unfounded theory than by sound deduction or rational empiricism; and their therapeutic value has been more frequently decided, simply by the issue of the cases in which they were used, that is, by the single fact of death or recovery, than by their influence in modifying the natural course of disease. Clinical observers too often reasoned, *post hoc, propter hoc*. Science could not accept such reasoning. In the mean time the other physical sciences, which had become more exact in their methods, more precise in their results, and more confident in their tone, advanced with unexampled rapidity. It was evident that therapeutics must imitate them, and take a new departure, or, renouncing all scientific aspirations, must be content with the position of a nurse, or descend to the role of a conjurer. The choice was soon made, and almost as soon as it was made the effect was seen in grander results and more rapid progress.

The urgent demand or fundamental necessity of scientific therapeutics was for an accurate determination of the physiological action of remedies. This, so far as drugs were concerned, implied two distinct lines of inquiry; first, an investigation into the course or progress of a drug through the system, by which its mysterious and tortuous windings through the secret channels, fluids, and organs of the economy, from ingestion to complete elimination or destruction, should be traced and ascertained, and all its metamorphoses and combinations in the body be determined with as much exactness as in the chemist's laboratory; and second, an investigation into the behaviour of the system as the drug passed along, or a determination of the organic and functional modifications, which accompany every step of the passage of the drug from its entrance into the system to its exit. Clinicians were content with the fact, that when chlorate of potash was administered, stomatitis was relieved more rapidly than when the chlorate was not used; and they accordingly advised the chlorate of

armory from which he draws all his weapons. It is a dwarfed and imperfect *materia medica* which is limited to the last of these four classes.

Intelligent physicians have always and everywhere, practically, if not theoretically, recognized the therapeutical importance of these four classes of remedies. Unfortunately professors in our medical schools, who have been charged with the duty of teaching *materia medica*, and writers, who have undertaken to expound it in text-books and learned treatises, have commonly discussed drugs alone. Hence the almost universal impression that physicians are limited, or limit themselves in the treatment of disease to the exhibition of drugs. In answer to the question, what was your treatment, most persons, medical or non-medical, expect only a catalogue of the medicines administered.

Treatment and drugging are too often synonymous. Dr. John Ware successfully resorted to the first class of agents to which we have referred, the subjects, when he prescribed a dose of volition in a case of hysterical aphonia. Put will enough into your throat, and not drugs, was his prescription, and you will speak. I will try, was his patient's courageous and confident answer; and she, who had not spoken for months, and for whose relief iron, electricity, counter-irritation, and the like had been tried in vain, by an effort that forced the blood to her head and crimsoned her cheeks and ears, sent a volitional stimulus to her glottis, which made her voice roll out like a blast from a trumpet. The paralysis was relieved and did not return. Abernethy, the most eminent and perhaps the roughest English physician of his time, selected a remedy from the second class, the *circumfusa*, in the case of an American clergyman, who had crossed the Atlantic to consult him, when he cut short the patient's laboured and querulous description of dyspepsia, blue devils, and hard parish work, with the curt advice, "damn your parish, go home and build a barn." The clergyman was scandalized and confounded, but like Naaman the Syrian, who concluded to wash and be clean, the American doctor of divinity swallowed his anger, and went home and built a barn. He was rewarded for his good sense by recovery. Sydenham, who fully appreciated the comprehensive character of a rational *materia medica*, and frequently employed non-pharmaceutical remedies, illustrated the importance of our third class, *dietetica*, when he ordered, in place of drugs, a roast chicken and a pint of canary for a patient, whose story is graphically told by John Brown in that delightful book, *Home Subseivæ*. Felix ille is the natural and just comment of the genial Edinburgh doctor on the patient's good fortune.

Dr. Bartholow's treatise has the merit, and a great merit it is, of including diet as well as drugs. Under the head of agents used to promote constructive metamorphosis, about thirty pages are devoted to a discussion of aliments, of special plans of diet, of alimentation in disease, and of water. This is too brief for so important and comprehensive a subject, but it is excellent as far as it goes. It contains a large amount of valuable matter which is apt to be neglected by the profession. As we have already intimated, this section of our author's work is a move in the right direction, and we wish that he had ventured further in the same path. If he had added an account of the physiological and therapeutical action of the mind and of surrounding influences to his account of diet and of drugs, if he had given us, as he is admirably qualified to do, a discussion of the subjects and *circumfusa* in his *materia medica*, as well as the *dietetica* and *medicamenta*, he would have presented to the medical

it gives of the physiological action of the remedies it describes. The recent admirable work of Dr. H. C. Wood, Jr., teaches and, we may justly add, demonstrates the importance of supplementing the clinical observation of the therapeutie application of drugs by an investigation into their physiological action. Dr. Bartholow's *Materia Medica* is another illustration of the same thing. His work does not ignore or depreciate the value of the empirical facts of a well-grounded and rational professional experience, but, as far as possible, it bases the therapeutical action of remedies upon their physiological behaviour. It would be an easy and grateful task to quote largely from our author in confirmation of this statement, but it is far better to refer the reader to the book itself. We cannot refuse, however, to call attention to the articles on alcohol, digitalis, belladonna, opium, and aliments as excellent examples of a clear and condensed presentation of recent acquisitions with regard to these agents, and of the relation of their physiological power to their therapeutical employment.

At the present time, when the discussion of the physiological action of alcohol, its position as a food or poison, as an unmitigated curse to humanity, devised by the devil, or as a blessing to the race, sent of God, is carried on by both parties, teetotallers and pro-alcoholites alike, with the utmost partisan acerbity, each advocating its own side, by partial statements, half truths and special pleading, it is refreshing for those who believe in the truth, the whole truth, and nothing but the truth, as the most efficient agent of reform, to meet with an impartial summary of the case, as far as known to science at present, and a judicial opinion upon it like the following:—

"The disposition of alcohol in the organism is a subject which has gone through several revolutions of opinion. At present the weight of authority and the deductions of experiment are in favour of that view, which maintains that, within certain limits (one ounce to one and a half ounces of absolute alcohol to a healthy man), alcohol is oxidized and destroyed in the organism, and yields up force which is applied as nervous, muscular, and gland force. The amount of alcohol ingested in excess of this oxidizing power of the organism, is eliminated as alcohol by the various channels of excretion—by the lungs, skin, kidneys, etc. As alcohol checks tissue metamorphosis, and thus diminishes the evolution of heat and force, it might be expected that the products of its own oxidation would supply the deficiency; but this is not the case. Alcohol is a useful food in the small quantity which increases, but does not impair, digestion, which quickens the circulation and gland secretion, but does not over stimulate, and which is within the limit of the power of the organism to dispose of by the oxidation processes. This amount has been pretty accurately shown, as stated above, to be one ounce to one ounce and a half of absolute alcohol for a healthy adult in twenty-four hours. All excess is injurious. North pole voyages, military expeditions (experiences in India and the Ashantee march), and the diminished power of resistance to cold shown by drunkards, have conclusively demonstrated that alcohol does not supply the place of other foods; and that those habituated to its use, damaged as they are in their vital organs, do not possess the same endurance of fatigue, and the same power of resistance to external morbid influences as do the healthy. Furthermore, clinical experience has amply proved that toppers do not bear chloroform well, that they succumb more quickly to injuries and surgical operations, and that they possess much less power of resistance than the temperate to the inroads of acute diseases. While these facts rest upon the soundest basis, it is equally true that alcohol is, within certain limits, a food; and that the organism may subsist for a variable period on it exclusively." (pp. 308-9.)

We had occasion at the beginning of this notice to remark that Dr. Bartholow's work was so good that it ought to be better, and we justified the criticism, by showing that while he has interpreted the science of materia medica more liberally than to make it only a descriptive catalogue of the articles on the druggist's shelves, he might have legitimately gone further than he has done in this new direction, and have added a discussion of mental and hygienic remedies to his account of aliments and drugs. We now repeat the remark in connection with his presentation of the physiological action and therapeutical application of medicines. He has discussed this part of his subject so well as to make us wish it had been possible for him to do it better still. The two distinct lines of investigation, which lead up to a knowledge of the physiological action of medicines, have previously been referred to, and the two distinct classes of facts which are thereby revealed, one belonging to the progress of drugs through the body and their metamorphoses, and the other, to the reaction of the economy upon the drugs as they pass along, have been indicated. That an accurate notion of how and when a drug passes into and passes out of the body, and of the phenomena accompanying its mysterious march, is necessary to a scientific therapeutics, is implied all through Dr. Bartholow's treatise, but the subject is not presented so clearly and prominently as to compel the attention of the reader. So far as it is possible to do so, each drug should be described in this way, and the practical therapeutical corollaries, which flow from such knowledge, should be appended and enforced. It is important, for example, that the practitioner should know, with regard to any given dose of bromide of potash which he prescribes, how long it remains in the stomach after ingestion, and in what form it leaves that organ, how the stomach is affected by its entrance into the gastric territory, its residence there, its departure therefrom, and the inferences to which these facts lead. In like manner, with regard to the blood, the brain, the nervous system, the heart, the capillaries, the kidneys, and all the functions and organs of the system, he desires the most precise information, that science can impart, as to how and when the dose he prescribes will affect them. Let us not be misunderstood. We do not assert that in the present condition of physiological science, it is possible for any one to render a complete account of all the particulars we have mentioned; but it is clear that as many of them should be given as possible, and they should be presented in separate paragraphs, and under distinct headings, so as to emphasize their importance.

There is another subject, and an important one, to which our standard works on materia medica give too little attention. It is the potency of different doses, or the physiological effect of variation in dose. The French call this *dosage*, a term for which, unfortunately, there is no single equivalent in the English language. Dosing conveys the idea of improper or excessive medication, while dosage means not merely the adaptation of the dose to the age, idiosyncrasy and pathological condition of the patient, but to the particular physiological result which the prescriber wishes to bring about. It is probable that practitioners recognize the fact that the number of minims or grains, which the *United States Dispensatory*, or any other work on materia medica, gives as the dose of a drug, by no means represents its physiological power. A small dose given frequently, that is, repeated at short intervals, of almost any drug, will affect the economy differently from a single legitimate dose. Doses, administered in such a way that each repeated dose enters the

blood before the previous one is eliminated, produce a continued physiological action, which cannot be obtained by the exhibition of a single dose, or of the frequent dose, or of a toxic dose. The practical importance of all this is obvious. But although such is obviously the case, no work on materia medica should leave it unexplained. It should be enforced as a part of the description of the physiological action of every drug. We might quote many passages from Dr. Bartholow's book to show that he is fully aware of the therapeutical value of dosage, but he has generally restricted himself to the old orthodox fashion of giving under the head of "dose" the average quantity that is proper for administration.

We have extended these remarks so far as to leave very little space for any detailed account of the treatise on which we have commented. Fortunately only a few words are necessary for this purpose.

The work, comprised within the limits of a single volume of five hundred and thirty-seven pages, is divided into three parts. The first part, consisting of sixteen pages, describes briefly the modes in which medicines are introduced into the organism. The second part, which forms the bulk of the work, is devoted to a discussion of the actions and uses of remedial agents. The third part gives an account of topical remedies. No scientific classification of the materia medica is possible in the present state of science. Writers are therefore justified in adopting any classification that happens to suit their fancy, or in adopting none at all. In fact there are about as many different classifications as there are different writers upon this subject. Our author has devised a new one, which has at least the merit of simplicity, though it is of very little practical value. He divides remedial agents, excluding topical remedies, into four classes: 1. Those used to promote constructive metamorphoses. 2. Those used to promote destructive metamorphoses. 3. Those used to modify the functions of the nervous system. 4. Those used to cause some evacuation from the body. Under the first head, or constructive agents, are placed aliments, iron, quinia, vegetable bitters, water, pepsine, oils, fats, acids, and the like. Under the second head, or destructive agents, are placed alkalies, iodine, mercury, antimony, colchicum, and their congeners. Agents which modify the functions of the nervous system are divided into those which excite the functional activity of the general nervous system, like electricity and nuxvomica; those which excite the activity of the cerebrum, like camphor and valerian; those which diminish or suspend the functions of the brain after antecedent excitement, like alcohol, ether, and opium; and those which depress the motor functions of the spinal cord and sympathetic, like conium, aconite, and veratrum viride. Evacuants are divided, in accordance with their prominent physiological actions, into emetics, cathartics, urino-genital remedies, and so on. Under topical remedies are placed antiseptics, counter irritants of all sorts, and emollients. In describing each article, a definite and systematic order is followed, which contributes not less to the clearness than to the conciseness of the description. There is first the technical name of the article to be described, with a brief and comprehensive definition of it, and its average dose. This is followed by a list of preparations into which the article enters, and their doses. Its antagonists and incompatibles are mentioned next, and these are followed by a brief account of the agents that aid its remedial actions, or its synergists. Its physiological action is then described, to which are appended its various therapeutical applications. A list of the authorities referred to, concludes the account of each separate article.

We are glad to notice that a large number of medicines whose virtues, to say the least, are of doubtful importance, but to which the superstitious and whims of the past attributed a fictitious value, are not to be found in Dr. Bartholow's list of remedies. Another class of agents, whose power to affect the economy is undoubted, but which, as the profession have learned by sad experience, are more likely to do harm than good, like antimony and colchicum, are described with commendable brevity. Still another class of agents, likeaconite and belladonna, with whose names the profession have been familiar for ages, but of whose virtues it has taken little note, are brought into prominent notice, and described as they should be at considerable length. Ample space, moreover, is given to those few agents which have been, and always will be chief among drugs—opium, iron, bark, alcohol, and two or three others.

Classical authorities tell us that *Æsculapius*, the mythical father of medicine, who brought down from gods to men a knowledge of the healing art, flourished about three thousand years ago. If the account current between drugs and humanity from that nebulous age till now were closed to-day, and the former credited with all the lives they have saved, all the pain they have alleviated, and all the good they have done, and charged with all the deaths they have caused, the distress they have produced, and the harm they have wrought, we fear that humanity, on looking at the result, would cry out, away with all doctors' stuff; sink it, as Dr. Oliver Wendell Holmes proposed, to the bottom of the sea. While we rejoice that the prescribing of drugs is only a small part of a physician's duty, we also rejoice that the account to which we have referred is not yet closed. When another three thousand years have passed, the summing of it up will show a different result. Humanity will then accept drugs and gladly give them place as assistants, not disturbers of nature's healing laws. The book which has here been reviewed, and whose last leaves we now turn over, is an unspicious harbinger of that better day in the future, whose dawning we can see, but whose full effulgence a distant posterity alone will witness.

E. H. C.

ART. XXVIII.—*A Treatise on the Science and Practice of Midwifery.*

By W. S. PLAYFAIR, M.D., F.R.C.P., Professor of Obstetric Medicine in King's College; Physician for the Diseases of Women and Children to King's College Hospital; Examiner in Midwifery to the University of London, etc. etc. With two plates, and one hundred and sixty-six illustrations on wood. Svo. pp. 576. Philadelphia: Henry C. Lea, 1876.

WERE Siebold, the historian of obstetrics, continuing his great work in these times, he would find himself kept busy chronicling the numerous text-books and new editions which now follow each other in rapid succession; he would doubtless pause to inquire whether, in view of the great excellence of some of the later ones, there was really need for any more. This question was evidently in the mind of the author of the work we now undertake to examine, for although not stating it, yet in his preface he virtually answers it. He finds justification for the publication of his work in the rapid progress made of late in this branch of medical science, in

the fact that there is no department of medicine "in which modern views of practice differ more widely from those prevalent only a short time ago." He boldly states that "on certain important points he has recommended a practice which not long ago would have been considered heterodox in the extreme, and which even now will not meet with general approval." A book which introduces itself to us in such a manner, which claims to be "an epitome of the science and practice of midwifery which embodies all recent advances," challenges the attention of all. To the student and practitioner, the appearance of such a work cannot but be an event of the greatest interest, while it imposes upon us the duty of inquiring how the self-imposed task has been performed, and whether the standard set up has been reached; for not all that is new is good, and as to the matter of writing a satisfactory text-book, it is far more frequently attempted than achieved.

After a careful examination of the work, an examination begun under the conviction that we already had a text-book of obstetrics that is entirely satisfactory, we feel compelled to render judgment in favour of the author. In our opinion he has been decidedly successful in his undertaking, having produced a most excellent manual for the student, and a most valuable work of reference for the practitioner. Several characteristics of the work justify us in pronouncing this opinion. There is throughout that plain and clear statement of fact which is peculiarly appropriate for a scientific treatise; there is no useless verbiage, and no encumbering rhetorical ornament. We mark this especially in chapters on such important and practical subjects as the signs and symptoms of pregnancy, on hemorrhage after delivery and on placenta prævia, which we consider admirable and excellent. The work contains full information upon subjects not generally found in text-books, such, for instance, as sudden death during labour, pregnancy complicated with ovarian tumour, conjoined and locked twins. We find, too, that it presents the most recent advances in the science of which it treats. There are the latest discoveries in regard to the anatomy of the ovary; the relation of the time of conception to menstruation; among the signs of pregnancy not only Rasch's test by fluctuation from the abdomen to the vagina, but the far more practical one of intermittent contractions of the uterus, recently brought prominently forward by Braxton Hicks, a sign which is said to be always discoverable, and one upon which the author places a high value. We find noticed, also, the operation of gastro-elytrotomy, and the induction of premature labour in placenta prævia is advocated. In another point we think there is especial excellence. The author possesses that judicial tone of mind so necessary when subjects are under consideration upon which our knowledge is yet incomplete, and upon points in regard to which practical men are not yet in agreement. He states the case, and sums up the argument in such cases with admirable good judgment, clearness, and precision. Again, there is an entire absence of that devotion to, or partiality for, pet theories, which is the greatest enemy to scientific teaching, as it is to scientific investigation. The author has no hobbies to ride, but manifests throughout that true spirit of science which seeks only to know the truth, and nothing but the truth, and which will be content with nothing less than the whole truth, or the nearest possible approach to it.

We are aware that this is no scant praise, and it behooves us to show that we are justified in rendering it. This, we think, we can do by

glancing at some few portions of the book, giving preference to those of a practical character; and we shall, at least, afford an opportunity for our readers to form an independent judgment.

Passing over the anatomical and physiological portions we first stop at the two chapters on Diseases of Pregnancy, a subject which is exceedingly well treated, considering the limited space at disposal in a volume of this size. We find here a decided judgment in favour of the production of premature labour for albuminuria, a doctrine which is not yet generally accepted, but one which has of late rapidly made progress, and now seems to be finally adopted. In this country it has been advocated by Elliott and T. G. Thomas, and has been made the subject of an elaborate paper by Dr. S. C. Busey.¹

"The propriety of this procedure in the albuminuria of pregnancy, has of late years been much discussed; and I believe that, having in view the undoubted risks which attend this complication, the operation is unquestionably indicated, and is perfectly justifiable in all cases attended with symptoms of gravity. It is not easy to lay down any definite rules to guide our decision, but I should not hesitate to adopt this resource in all cases in which the amount of albumen is considerable and progressively increasing, in which treatment has failed to lessen the amount; and, above all, in every case attended with threatening symptoms, such as severe headache, dizziness, or loss of sight. The risks of the operation are infinitesimal compared to those which the patient is running, in the event of puerperal convulsions supervening, or chronic Bright's disease becoming established. As the operation is seldom likely to be indicated until the child has reached a viable age, and as the albuminuria places the child's life in danger, we are quite justified in considering the mother's safety alone in determining on its performance." (p. 184.)

But a few years since we were so unfortunate as to meet with a case of pregnancy complicated with a large ovarian tumour, and could find no counsel except from some scattered articles in journals. Here we have the results of the recent study of ovariectomy fully presented, and although the extract is long, we give the author's remarks entire, from their great practical value, and because it well illustrates his style. After stating that of thirteen cases of labour complicated with ovarian tumour, collected by himself, far more than half proved fatal; he continues:—

"It is obvious, then, that the risks are so manifold, that in every case it is advisable to consider whether they can be lessened by surgical treatment. The means at our disposal are either to induce labour prematurely, to treat the tumour by tapping, or to perform ovariectomy. The question has been particularly discussed by Spencer Wells, in his work on Ovariectomy, and by Barnes, in his *Obstetric Operations*. The former holds that the proper course to pursue is to tap the tumour when there is any chance of its being materially lessened in size by that procedure, but that when it is multilocular, or when its contents are solid, ovariectomy should be performed at as early a period of the pregnancy as possible. Barnes, on the other hand, maintains that the safer course is to imitate the means by which nature often meets this complication, and bring on premature labour without interfering with the tumour. He thinks that ovariectomy is out of the question, and that tapping may be insufficient, and leave enough of the tumour seriously to interfere with labour. So far as recorded cases go, they unquestionably seem to show that tapping in itself is not more dangerous than at other times, and that ovariectomy may be practised during pregnancy with a fair amount of success. Wells records six cases which were surgically interfered with. In one, tapping was performed; and in five, ovariectomy; and all of these recovered; the pregnancy going on to term in

¹ Reprint from National Medical Journal.

four, and the fifth being combined with the Cæsarean section. On the other hand, five cases were left alone, and either went to term, or spontaneous premature labour supervened; and of these, three died. The cases are not sufficiently numerous to settle the question, but they certainly favour the view taken by Wells rather than by Barnes. It is to be observed that, unless we give up all hope of saving the child, and induce abortion at an early period, the risk of induced premature labour, when the pregnancy is sufficiently advanced to hope for a viable child, would be almost as great as that of labour at term; for the question of interference will only have to be considered with regard to large tumours, which would be nearly as much affected by the pressure of a gravid uterus at seven or eight months, as by one at term. . . . The success of ovariectomy during pregnancy has certainly been great, and we have to bear in mind that the woman must necessarily be subjected to the risk of the operation sooner or later, so that we cannot judge of the case as one in which even a successful abortion terminates the risk. Even if the operation should put an end to the pregnancy—and there is at least a fair chance that it will not do so—there is no certainty that that would increase the risk of the operation to the mother, while as regards the child we would only then have the same result as if we intentionally produced abortion. On the whole, then, it seems that the best chance to the mother, and certainly the best to the child, is to resort to the apparently heroic practice recommended by Wells. The determination must, however, be to some extent influenced by the skill and experience of the operator. If the medical attendant has not gained that experience which is so essential for a successful ovariectomist, the interests of the mother would be best consulted by the induction of abortion at as early a period as possible. One or other procedure, however, is essential; for, in spite of a few cases in which several successive pregnancies have occurred in women who have had ovarian tumours, the risks are such as not to justify an expectant practice. Should rupture of the cyst occur, there can be no doubt that ovariectomy should at once be resorted to, with the view of removing the lacerated cyst and its extravasated contents." (pp. 197-9.)

The chapter upon the Management of Labour presents some points of great practical interest. The author teaches, of course, the usual English obstetric position of the patient, on the left side, and well says, "it would be useless to insist on any other, even if it were advisable." The fact is, this is not a matter of reason, but is a firmly rooted national custom, and as such is most tenaciously clung to. Almost every nation has its peculiar and favourite position in labour, and what is very singular, each stoutly maintains that its position is the best and insures an easier process of parturition.¹ But we cannot for the life of us see how the position general in this country, on the back, "certainly leads to unnecessary exposure of the person," a statement which the author makes twice, and that, too, when he recommends this position for passage of the catheter! If rupture of the perineum be favoured by dorsal delivery, that is a far more serious matter, and deserves attention. The author quotes the statistics of Schröder to support this view, but we cannot think them enough to settle the question, although certainly enough to indicate that further accurate information is desirable upon this point. When, however, the author claims that the position on the side is *superior* to that on the back for forceps operations, as he does, and uses, too, the instrument having the double curve, we take issue with him, or at least point to it as a wonderful instance of the effect of early education and long habit. With these his claim may possibly be true, but for the student and the beginner we do not see how there can be a question.

¹ Ueber die Lage und Stellung der Frau während der Geburt bei verschiedenen Völkern. Von Dr. H. H. Ploss, Leipsic, 1872.

The management of the perineum during the closing stage of parturition is a subject upon which there has been a great change of opinion within about a decade, brought about chiefly by the writings of Graily Hewitt and Leishman. We find the author in general agreement with these opponents of perineal support, although not going so far as to incalculately leaving the perineum entirely alone. He corrects the usual and general mode of procedure, and says: "The less pressure that is applied directly to the perineum the better. Nor is it either needful or advisable to sit by the patient with the hand applied to the perineum for hours, as is so often practiced." This reaction against extreme doctrine based upon exaggerated fears and erroneous views is not, however, new, but revived, for it was held by Meade, and Ritgen, and others, and Wigand distinctly taught that pressure upon the perineum was likely to do more harm than good, and that to restrain too rapid advance the force should be applied to the head itself, and he must have been one of the first objectors to the practice, since supporting the perineum did not become general until during the latter half of the last century.¹ The author mentions, with commendation, Dr. Goodell's plan of inserting two fingers into the rectum, hooking up the perineum and drawing it forwards towards the pubes. "I have followed this plan frequently, and believe that it admirably answers its purpose," at the same time admits that it is "repugnant both to the practitioner and patient." Assistance rendered in this way is a procedure which especially excited the ire of Oslander, probably because Stein had recommended it.² He terms it "*den alten gurestigen Handgriff*," for it was even then "old," having been recommended by Smellie; and again, "*der ekelhafte Handgriff*" says that he who practises it will always be told that he has "got into the wrong phre!"³ and relates much of injury done especially by midwives in making use of it. However, we learned early in life to attach some value to assistance rendered in this way, more however by pressing the head forwards and compelling it to hug the pubic arch, from the number of times it was communicated to us by older men, as a great discovery they had made, worthy of being kept a profound secret!

Finally, how much of the error relating to this matter has originated in a misuse of words? "Support" implies the expenditure of strength, which is wrong; the author says "the term 'supporting the perineum' conveys an unquestionably erroneous idea," and he is right. It has always seemed to us that had the phrase been framed "*watching the perineum*," it would have been far clearer and better, for that is what the student should be taught to do. One great danger to the perineum is undoubtedly from precipitate labours, but they are not common. In ordinary cases there can be no danger of rupture until the last moment of extreme extension has arrived, and just then such aid may be given as is required. Leishman puts the matter in its true light, although he does not formally propose the term we have suggested, when he says that the

¹ Geburt des Menschen, by Nägele; il. 544, Berlin, 1820.

² Leishman, Mechanism of Parturition; System of Midwifery, Amer. ed. p. 277. Goodell, Management of the Perineum during Labour, Amer. Journ. Med. Sci., Jan. 1871; one of the best historico-medical essays ever produced in this country.

³ Handbuch der Entbindungskunst, il. pp. 159, 225.

⁴ Which will not happen unless the practitioner resorts to it too soon. It cannot be of service until the perineum is so distended that the sensibility of the parts is obtunded.

proper management of this stage "consists in watching the amount of pressure to which the perineum is being subjected."

We do not find here any recognition of what we believe to be the truth, that the *quality* of the tissues has much to do with this accident. In the language of Hecker, "Sometimes a perineum is met with that tears like tinder."² Baker Brown, in his *Surgical Diseases of Women* (2d ed. p. 4), teaches nearly the same doctrine.³ The limited experience we have had with this lesion, certainly favors the view that this is a most important factor.

Probably upon no part of the management of natural labour has doctrine varied so much as in regard to the third stage. The do-nothing policy reached its extreme point under William Hunter. He was a firm believer in the omnipotence of "nature," and he therefore left the expulsion of the placenta entirely to the natural powers, and taught this practice in his lectures. We are told that under one of Dr. Hunter's pupils, a patient retained the placenta thirteen days, and in another eleven days, to be expelled in a state of putrefaction. But two or three fatal cases, which took place in Hunter's own hands, finally caused him to change his views and his teachings.³ Since then, manual extraction after short delay, may be stated to be the general plan pursued. It is a notable fact, too, that the assistance rendered has obscured, we may even say falsified, the natural process of events. The profession is indebted to Dr. Matthews Duncan for recently calling attention to the real process of placental delivery, and the understanding of this, with the method of expression taught by Credé, has established the latest and most improved method of placental delivery, which is entirely physiological and above all eminently preventive of some of the worst sequences of labour. Dr. Playfair is a warm advocate of Credé's method, and expresses the fullest confidence in its efficacy. After tracing the natural process, as taught by Duncan, he describes and illustrates the ordinary mode of delivery by traction on the cord, in which it "passes through the os very much in the shape of an inverted umbrella," obstructing the passages, and tending to produce hemorrhage. He then gives directions for effecting expulsion by means of abdominal pressure, and says:—

"In nineteen cases out of twenty the finger need never be introduced into the vagina after the birth of the child, or the cord touched." (p. 263.)

"The cardinal point to bear in mind is that the placenta should be expelled from the uterus by a *vis a tergo*, not drawn out by a *vis a fronte*." (p. 262.)

In the chapter on Hemorrhage after Delivery he again impresses the importance of this mode of delivery:—

"It is a curious fact that post-partum hemorrhage is much more common in the practice of some medical men than in that of others; the reason being that those who meet with it often are careless in their management of their patients immediately after the birth of the child. That is just the time when the assistance of a properly qualified practitioner is of value, much more so than before the second stage of labour is concluded; hence, when I hear that a medical

¹ System of Midwifery, second Am. ed., p. 278.

² Schröder's Manual of Midwifery, p. 306.

³ "Some may imagine that such an accident at parturition ought not to occur in the hands of a careful practitioner—an inference, however, not countenanced by the records of obstetric medicine. It has occurred in the practice of the best accoucheurs, and some of its causes can neither be obviated nor removed." (p. 3.)

⁴ Merriman: Synopsis of Difficult Parturition, 1820, p. 145.

man is constantly meeting with severe post-partum hemorrhage, I hold myself justified, *ipso facto*, in inferring that he does not know, or does not practise, the proper mode of managing the third stage of labour." (pp. 273-4.)

This is sound doctrine; these are words of wisdom. Let the student and young practitioner bear them in mind; he may be sure that in pursuing this plan he takes the surest means of preventing some of the worst complications of the puerperal state.

Continuing the subject of expression brings us to the chapter on Prolonged Labour, where we find this procedure applied for the expulsion of the child, an application of the method due rather to Kristeller than to Credé, although, like so many other things in medicine, it was used, or proposed, by others before, as Buseh and Von Ritgen.¹ In the opinion of the author this is an addition to our resources of very considerable value, and one which, we are told, is beginning to be used in English practice.

"Credé maintains that it is possible to effect the complete expulsion of the child by properly applied pressure, even when the pains are entirely absent. Strange as this may appear to those who are not familiar with the effects of pressure, I believe that, under exceptional circumstances, when the pelvis is very capacious, and the soft parts offer but slight resistance, it can be done. I have delivered in this way a patient whose friends would not permit me to apply the forceps, when I could not recognize the existence of any uterine contraction at all, the fœtus being literally squeezed out of the uterus. It is not, however, as replacing absent pains, but as a means of intensifying and prolonging the effects of deficient and feeble ones, that pressure finds its best application." (p. 312.)

The indications and contra-indications are then given:—

"If the uterus seem unusually tender on pressure, and, *a fortiori*, if the tonic contraction of exhaustion be present, it is inadmissible. So, also, if there be any obstruction to rapid delivery, either from narrowing of the pelvis, or rigidity of the soft parts, it should not be used. The cases suitable for its application are those in which the head or breech is in the pelvic cavity, and the delay is simply due to a want of sufficiently strong expulsive action." (p. 312.)

This process of aiding labour is so manageable, and so nearly resembles the natural process, that he gives it the preference to ergot, a drug which finds no more favour at his hands than its merits, or demerits we should say, entitle it to. It is very briefly treated of, indeed, occupying less than a page. He points out, however, the dangers which accompany its administration, both to the mother and child, although he says nothing of its influence in causing irregular contraction of the uterus, thus producing hour-glass contraction and retained placenta, which we believe to be the most frequent, if not the most serious, of its evil effects. However, he justly, almost entirely, banishes it from practice as an oxytocic, but counsels its use for promoting uterine contraction after delivery.

This introduces us to the subject of instrumental assistance in labour, and the author's position is betrayed at the outset by the quietus he gives to one of the time-honoured maxims of the profession, a maxim which has been quoted and misquoted times without number, which has ever been the bignear of timidity, the shield of ignorance, the prolific parent of innumerable sins of omission: "*Meddlesome midwifery is bad.*"

"When this proverb is applied to restrain the rash and uninstructed interference of the ignorant, it is of undeniable value; but when it is quoted to

¹ Suchard: *De l'Expression Uterine Appliquée au Fœtus*. Paris, 1872.

prevent the scientific action of the experienced, who know precisely when and why to interfere, and who have acquired the indispensable mechanical skill, it is sadly misapplied."

And now why did not the author finish off "*Nature*" while he was about it? Why not give the *coup de grâce* to that personification, which, like the above maxim, is used as a refuge and defence for ignorance and incompetence? That same "*Nature*," whose powers are so trusted and relied upon to escape from difficulties, who is looked up to and invoked as the sovereign and benign disposer of events, gives us the frightful hemorrhage of placenta prævia, and the disaster of shoulder presentations, under which dispensations we have no respect for her authority, do not wait on her movements, and do not hesitate to trespass on her domain.

The varying fortunes of the forceps as an aid in labour would make one of the most curious chapters in the history of medicine. They have passed from the highest esteem to the deepest reprobation, have been resorted to with a frequency beyond all justification, and have been neglected until the resulting mortality excites our horror. Thus Zeller had 10,454 cases of labour without using the forceps once!¹ and Boer, 29,961 cases, with only 119 forceps deliveries.² On the other hand, Oslander, who carried the use of this instrument to the greatest extreme, used the forceps 1016 times in 2540 deliveries, or once in every 2.4 cases!³ In England the forceps had their origin, and it is a gift to suffering woman of which she may be justly proud. Yet there, and throughout Great Britain, the reputation of this instrument has, in times past, fallen quite as low if not lower than in any other country, and its use been restricted within limits so narrow as to excite the utmost surprise, especially in view of the eminently practical character of the people. No less an authority than Wm. Hunter, according to Leishman,⁴ rejected them entirely. Dr. Clarke, whose mastership of the Rotunda Lying-in Hospital closed in 1793, says: "Wherever labour is protracted to a dangerous length by unusual resistance, there is nothing but mischief to be expected from their application. . . . I am persuaded a fair opportunity of applying forceps with good effect will not occur to a rational practitioner in one thousand cases!"⁵ Writing of the earlier part of the present century, Beatty says that for "a period of full forty years this instrument was banished from practice through the whole of this country. The feeling was so strong against its employment, and the leaders of the outcry were so powerful, that no one dared to question the authority by which it was condemned." Under Dr. Labbatt, at the Rotunda, it was not used once in 21,867 labours, and under Collins, only 24 times in 16,654 cases.

Osborn,⁶ who was the especial advocate of the forceps, as against Denman and the vectis, who wrote that "there never was an instrument invented more ingenious in the original contrivance, more simple in the structure, better adapted, or more capable to overcome every possible resistance, to answer every beneficial intention, and to guard against every possible injury either to mother or child," laid down rules for the

¹ Siebold: *Geschichte der Geburtshülfe*, ii. 449.

² Abegg: *Zur Geburtshülfe u. Gynäkologæ*, Berlin, 1868.

³ Siebold, ii. 604.

⁴ *Mechanism of Parturition*, p. 43.

⁵ Beatty, *Contributions to Medicine and Midwifery*, Dublin, 1866, p. 5.

⁶ *Essays on the Practice of Midwifery*, London, 1792, pp. 57, 59, 88.

use of it which are nothing less than barbarous. The forceps were not to be applied until symptoms had occurred to "demonstrate that the living powers of the whole body, or *vis vitæ*, are greatly reduced, if not irrecoverably exhausted!"—one of the symptoms being "continued cessation of the labour-pains for several hours, at the end of the third or fourth day!"

It may be said that we have cited extreme cases; but their number counters the objection. Nor can it be denied that neglect of, if not direct hostility to this instrument has been a marked characteristic of British midwifery, one which has more than once called forth the merited reproach of other nations. Now, however, the current of doctrine and of practice has changed. Within a few decades past the cause of the forceps has been advocated by some most intelligent and active workers, not all of them occupying high positions, or filling chairs in metropolitan schools; the advantages of the instruments have been insisted on, its dreaded dangers shown to be imaginary, and it has been used so frequently that it now occupies its true position as the most beneficial and harmless instrument in the obstetrician's armamentarium. The struggle has been a long and severe one between the conservatives who would only resort to the instrument when failure of the natural powers was unequivocally demonstrated, and those who maintained that they should be used in anticipation of the evils resulting from delay. With the latter we find the author teaching plainly the doctrine that "the mere prolongation of labour is in itself a serious thing." This is quite different doctrine from that taught by Osborn,¹ that "in these [severe and long-continued] cases, the tediousness and painfulness of the labour, however irksome to bear, have a considerable share in insuring the future security and perfect recovery of the patient!"—quite different from that taught by even so late a writer as Murphy, that "the mere protraction of labour is no justification for interference."²

The author is in company then, we are happy to say, with all the leading British teachers and authorities of the present day upon this point; and we may now say that the reproof of neglecting one of the most glorious of her contributions to medical progress, and one of the most efficient instruments for the preservation of the life of both mother and child.

"It is now recognized as an axiom by the most experienced teachers that, when we are once convinced that the natural efforts are failing, and are unlikely to effect delivery, except at the cost of long delay, it is far better to interfere soon rather than late, and thus prevent the occurrence of the serious symptoms accompanying protracted labour." (p. 313.)

We have here no directions for waiting until the head has rested a certain number of hours on the perineum; no admonitions not to operate until an ear can be felt, or until certain that absolutely no progress is being made, but,

"What has to be done, I conceive, is, to watch the progress of the case anxiously after the second stage has fairly commenced, and to be guided by an estimate of the advance that is being made and the character of the pains, bearing in mind that the risk to the mother, and still more to the child, increases seriously with each hour that elapses. If we find the progress slow and unsatisfactory, the pains flagging and insufficient, and incapable of being intensified by the means indicated, then, provided, the head be low in the pelvis,

¹ Op. cit. p. 54.

² Lectures on Midwifery, 2d ed. 1862.

it is better to assist at once by the forceps, rather than to wait until we are driven to do so by the state of the patient." (p. 315.)

He is careful to point out that the use of the instrument, when the head is low down and when it is arrested in the cavity of the pelvis, or at the brim with, possibly, an undilated os are two very different matters. In the latter case :—

"The application of the forceps is an operation requiring much dexterity for its proper performance, and must never be undertaken without anxious consideration. It is because these two classes of operations have been confused together, that the use of the instruments is regarded by many with such unreasonable dread."

Of the numerous instruments in existence, "so numerous as to make it almost appear as if no one could practise midwifery with the least pretensions to eminence" (and in this country often without even that), "unless he has attached his name to a new variety of forceps," he prefers Simpson's. He, therefore, abandons the short forceps altogether, an instrument which has been most conservatively clung to in England from the time of Denman, and together with such fellow-teachers of his country as Barnes and Meadows, prefers the long and double curved instrument as suitable for all cases and all emergencies, which the short straight forceps is not. The objection that they are too powerful he well meets by the remark that "the existence of power does not involve its use, and the stronger instrument can be employed with as much delicacy and gentleness as the weaker," and quotes a paragraph from Hodge to the same import.

The short forceps having been abandoned, he also abandons the rule that the blades of the instrument be applied to the sides of the child's head, and as this is a question which still divides obstetricians, we give his own words in regard to it.

"It is admitted that in the high forceps operation the blades must be introduced in the transverse diameter of the pelvis, without relation to the position of the head. On the continent it is generally recommended that this rule should be applied to all cases of forceps delivery alike whether the head be high or low, and I have now for many years adopted this plan and passed the blades in all cases, whatever be the position of the head, in the transverse diameter of the pelvis, without any attempt to pass them over the bi-parietal diameter of the child's head. Dr. Barnes, in his standard work on Obstetric operations, points out with great force that, do what we will, and attempt as we may, to pass the blades in relation to the child's head, they find their way to the sides of the pelvis, and that the marks of the fenestræ on the head always show that it has been grasped by the brow and side of the occiput. Of the perfect correctness of this observation I have no doubt; hence it is a needless element of complexity to endeavour to vary the position of the blades in each case, and one which only confuses the inexperienced practitioner, and renders more difficult an operation which should be simplified as much as possible." (p. 432.)

The author finds in the greatly diminished infant mortality which attends a more frequent resort to the forceps, one of the strongest arguments in favour of the views he holds as to the instrument. We cannot agree with him, when he states that this is a point which "has been little dwelt on." That the forceps is the child's instrument, that it will rescue many infants otherwise still-born, was taught by Meigs¹ in our country, more than twenty years ago; it was not only taught but

¹ *Obstetrics; the Science and the Art*, 2d ed., 1852, pp. 539, 540.

reiterated, and impressed in the strongest language possible, as worthy of the utmost attention of the student. It was, too, the first step in advance towards placing the instrument in the position it now occupies. And now that this great change has been effected in English midwifery, it is but just and right that he and others should have credit for it, or at least it should be known that the doctrines as to the forceps, to which the English have now attained, have been current with us for a generation.

There are some excellent remarks upon the dangers of the forceps; in most cases of injury from them he believes that "the fault lay not in the instrument, but in the hand that used it." In regard to the production of vesico-vaginal fistula, he gives some instructive statistics which seem to prove in the clearest manner, that in the large majority of cases this unhappy accident may be directly traced to the bad practice of allowing labour to drag on many hours in the second stage without assistance, and not to premature instrumental interference." This had been shown by Emmet, in this country, and Jobert de Lambelle maintained that vesico-vaginal fistula is *always* the result of prolonged labour and is *never* produced by the forceps.¹ Although not supported by statistics this doctrine is not new; it was presented by Oslander and by the elder Dubois.²

The choice of treatment, as between version and forceps, in cases in which the pelvis is contracted has been and still is, as the author well remarks, "one of the most vexed questions in midwifery," and in view of the recent discussion upon the subject here, we can by no means fail to give his position in regard to it. We think, he here shows again that sound judgment and freedom from partisanship which win our confidence for him as a guide where authorities differ and opinions are conflicting; he states the question briefly and clearly, and makes some admirable remarks upon the necessity of giving time for the process of moulding the child's head to go on, and the mistake of interfering too soon. The instrument being generally considered applicable to all cases where the diameter of the conjugate is about $3\frac{1}{4}$ inches, he says:—

"It is very likely that the forceps do not act equally well in all cases. When the head is loose above the brim; when the contraction is chiefly limited to the antero-posterior diameter, and there is abundance of room at the sides of the pelvis for the occiput to occupy after version; and when, as is usual in these cases, the anterior fontanelle is depressed, and the head is placed in a very oblique position, it is probable that turning may be the safer operation for the mother, and the easier performed. When, on the other hand, the head has engaged in the brim, and has become more or less impacted, it is obvious that version could not be performed without pushing it back, which may neither be easy nor safe. It is probable, also, that in the generally contracted pelvis, in which the contraction is not limited to the conjugate diameter, and in which the head enters in an exaggerated state of flexion, the posterior fontanelle being much depressed, the forceps are more suitable." (pp. 354-5.)

"That delivery is often possible by turning after the forceps and the natural powers have failed, and when no other resource is left but the destruction of the child, must, I think, be admitted by all; for the records of obstetrics are full of such cases." (p. 355.)

"The original choice of turning is a more difficult question to decide. My own impression is that the forceps will generally be found to be the preferable operation of the two, except, perhaps, when the head refuses to enter the brim, and cannot be sufficiently steadied by external pressure to admit of the easy

¹ Joulin: *Traite des Accouchements*, p. 1070.

² *Handbuch der Geburtungskunst*, vol. ii. p. 143.

application of the instrument. An argument used by Martin, of Berlin, in reference to the two operations, should not be lost sight of, as it seems to be a valid reason for giving a preference to the forceps. He points out that moulding may safely be applied for hours to the vertex; but that when pressure is applied to the important structures about the base of the brain, as, after turning, moulding cannot be continued beyond five minutes without proving fatal. This, however, is no reason why turning should not be used after the forceps and the natural efforts have proved ineffectual." (p. 356.)

Closing what we have to say of the forceps, we must criticize some of the illustrations. Generally through the book they are good, and the two plates, after Braune, are excellent, even in the reduced scale in which they are compelled to appear. But some of the diagrams are very wide of the mark indeed. In Fig. 152, for instance, the instrument has the head only between the tips of the blades, a grasp which would not "hold" under any traction at all, and one with which any considerable pressure must sink the ends of the blade into the scalp. Fig. 153 calls to mind the artist (1) who placed under his production, "This is a horse!" that there might be no mistake! It is said that the figure represents the handles of the forceps turned upwards towards the mother's abdomen as in the termination of the delivery, but it does not do so. The handles project nearly in the axis of the woman's body, nor could they turn up towards the abdomen with the position given to her and to the operator's hand, which is over the blades, instead of under, as it must be at that stage of the extraction.

We cannot continue the subject of obstetric operations. The chapter which follows, on the destruction of the child by craniotomy or evisection, as the case may be, is equal to any of the others. At the beginning, he frankly admits that the frequency with which it has been resorted to, "constitutes a great blot on British midwifery." The器械 for extraction, he designates as an "obsolete instrument," the craniotomy forceps being in every respect preferable, and he thinks Simpson's cranioclast, an instrument that has never conquered for itself an established position, the best of these. The most noteworthy feature of this chapter is his high estimate of the cephalotribe, which has never been a favourite in England, and which has received but little countenance until within about the last decade. In all cases, except those of extreme contraction, he advises the use of this instrument immediately after perforation. We do not find Braun's book, for decapitation, noticed among the instruments for embryoleia; one of the few omissions of novelties in the work.

The subject of anæsthesia in labour is very briefly disposed of, for the most excellent reason that, so far as chloroform is concerned, there is no longer any argument "required to establish its being a perfectly legitimate means of assuaging the sufferings of childbirth." This is now, we believe, the almost unanimous position of all English-speaking authorities upon this subject, and we record it with the satisfaction one may be supposed to feel who has seen it, from the beginning, win its way in spite of prejudice, and in the face of opposition, and who has disappointed many solemn prophecies of disaster, to the infinite disgust of the prophets. Quite as much space is taken up with the consideration of chloral as with chloroform, and the practitioner will find full information as to the administration of this more recent anæsthetic, and the cases to which it is adapted. The author estimates its value very highly, and has seen no evil result from its use.

Part V. of the work is on the Puerperal State, and contains chapters

on the management of the lying-in woman and of the infant, together with the puerperal diseases and their treatment. There is much here worthy of notice had we not already exceeded our limits. It would be scarcely just, however, not to give the author's position in regard to the vexed question of puerperal fever, which of late has attracted so much attention and excited so much debate. Briefly, then, he denies the existence of a peculiar and specific puerperal fever, and looks upon the disease as a septicæmia differing in the local manifestations of the constitutional affection. Indeed, he *calls* it "puerperal septicæmia," and says—

"The whole tendency of recent investigation is daily rendering it more and more certain that obstetricians have been led into error by the special virulence and intensity of the disease, and that they have erroneously considered it to be something special to the puerperal state, instead of recognizing in it a form of septic disease, practically identical with that which is familiar to surgeons under the name of pyæmia or septicæmia." (p. 516.)

He is very far from maintaining that our knowledge is complete upon this subject; says that the theory of septicæmia "offers a far better explanation of the phenomena observed, than any other that has yet been advanced;" that much investigation is yet necessary, and "if any real advance is to be made, it can only be by adopting an humble attitude by admitting that we are on the threshold of the inquiry; and by a careful observation of clinical facts, without drawing from them too positive deductions."

This view of the nature of the disease having been accepted, that it may spread by infection follows as a matter of course, and there are some interesting pages upon the origin of the disease, both autogenetic and heterogenetic. Any decomposing organic matter being capable of developing the morbid train of action, and the hands of the practitioner being one of the most frequent modes of conveyance of the poison, one of the most interesting, and indeed solemn questions, immediately arises as to how much of this is avoidable or unavoidable, and what course the practitioner should pursue in regard to withdrawing either from obstetrical practice, or from other cases when they are of such a nature as likely to imperil puerperal women under his care. When duty and interest clash, the decision is not easy; it is still more difficult when duty in one direction militates against duty in another. Upon this point, of so great practical interest, we quote the admirable remarks of the author in full.

"This question naturally involves a reference to the duty of those who are unfortunately brought into contact with septic matter in any forms, either in a patient suffering from puerperal septicæmia, zymotic disease, or offensive discharges. The practitioner cannot always avoid such contact, and it is practically impossible, as Dr. Duncan has insisted, to relinquish obstetric work every time that he is in attendance on a case from which contagion may be carried. Nor do I believe, especially in these days, when the use of antiseptics is so well understood, that it is essential. It was otherwise when antiseptics were not employed; but I can scarcely conceive any case in which the risk of infection cannot be prevented by proper care. The danger I believe to be chiefly in not recognizing the possible risk, and in neglecting the use of proper precautions. It is impossible, therefore, to urge too strongly the necessity of extreme and even exaggerated care in this direction. The practitioner should accustom himself as much as possible to use the left hand only in touching patients suffering from infectious diseases, as that which is not used, under ordinary circumstances, in obstetric manipulations. He should be most careful in the frequent employment of antiseptics in washing his hands, such as Condy's fluid, carbolic acid, or tincture of iodine. Clothing should be changed on leaving an infec-

tions case. Much more care than is usually practised, should be taken by nurses, especially in securing perfect cleanliness in everything brought into contact with the patient. When, however, a practitioner is in actual and constant attendance on a case of puerperal septicæmia, when he is visiting his patient many times a day, especially if he be himself washing out the uterus with antiseptic lotions, as it is frequently advisable for him to do, it is certain that he cannot deliver other patients with safety, and he should secure the assistance of a brother practitioner; although there seems no reason why he should not visit women already confined in whom he has not to make vaginal examinations." (pp. 525-6.)

One part of the book we marked for especial comment, but must forego the pleasure. It is the succeeding chapters on Puerperal Venous Thrombosis and Embolism, Arterial Thrombosis and its resulting gangrene, with sudden death during labour from these and other causes. It is a subject which the author has made a special study; in regard to some portions of it, he has new views to offer, and the whole is very fully and excellently treated.

Doubtless we have extended our notice of this work enough and made extracts sufficient to enable our readers to judge for themselves as to its merits. We are satisfied that they will agree with our high estimate of it as an admirable text-book for the student, and work of reference for the practitioner. They will also find that it is a complete embodiment of recent progress in this branch of medical science. As to the heterodox teaching, or that not yet generally accepted, to which the author alludes in his preface, that is a matter more concerning English midwifery; so far as instrumental interference with labour is concerned, the work will be found in accord with accepted doctrines here.

In closing, we may note a more frequent quotation of American authors than usual in English books, and an acquaintance even with our journal literature. We find quoted besides Meigs, Hodge, Bedford, Thomas, Sims, Barker, and other standard authorities, allusion to the writings of Goodell, Penrose, Engelman, Whittaker, and Minor. There are some notable omissions, however. The work is doubtless too recent to contain anything of the labours of the lamented Parry in the chapter on extra-uterine pregnancy, or Skene's successful case of gastro-elytrotomy; we could hardly expect an allowance of the claims of Wright of Cincinnati, as to cephalic and bimanual version; but we certainly expected to see the name of Dr. Isaac Taylor in connection with the changes the cervix undergoes during pregnancy, of Dalton in connection with the corpus luteum, and White of Buffalo with the reduction of chronic inversion of the uterus.

J. C. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIX.—*Guy's Hospital Reports*. Edited by H. G. HOWSE, M.S., and FREDERICK TAYLOR, M.D. Third Series. Vol. XXI. 8vo. pp. xx., 469. London: J. & A. Churchill, 1876.

THE current volume of this valuable series contains, as usual, about an equal number of medical and surgical papers, and in accordance with our custom we shall consider these separately, calling attention first to those of special interest to the physician.

In the remarks which precede the reports of *Cases illustrating the Diuretic Action of the Resin of Copaiba*, Dr. FREDERICK TAYLOR extols the valuable therapeutic properties of this drug, especially in the treatment of the various forms of dropsy, believing that it is to the resin and not to the oil, as is generally supposed, that the balsam owes its power of increasing the secretion of the kidneys. The resin was given in more than sixty cases treated in the wards at Guy's by Dr. Taylor and his colleagues. They include cases of (1) hepatic dropsy; (2) simple peritoneal effusion; (3) cardiac dropsy; (4) anasarca and ascites secondary to emphysema and bronchitis; (5) pleuritic effusion; (6) renal dropsy. As a result of its administration in favourable cases the quantity of urine was quickly increased, the specific gravity being at the same time much lowered; this result being frequently produced in cases in which digitalis and other diuretics had been given without effect. The diuresis, however, subsided immediately upon the withdrawal of the drug. In some of the cases the resin did not increase the flow of urine. In most of these the kidneys were extensively diseased, but even in these cases there was no evidence that positive harm followed its use.

It may be well to remind our readers that the urine of persons taking this drug yields a precipitate on the addition of nitric acid, closely resembling that produced by albumen, but care will generally enable us to distinguish one from the other. From twelve to fifteen grains may be given in emulsion three daily.

Considerations on the Cures in Insanity is the title of a long paper by Dr. GEORGE H. SAVAGE, who bases his statistics on the annual returns of Bethlem Hospital during the last ten years, from 1865 to 1874 inclusive. The paper has evidently been very carefully prepared, and will, we have no doubt, be considered a valuable one by alienists, but it would be impossible to present our readers with an abstract of it in the space at our command. As the general practitioner is more apt to see cases of insanity at the beginning than at any other time, we will quote the following paragraphs for his benefit:—

"It is to be observed that cases get well in much larger proportion if they have been sent to an asylum early. This is a most vital point, and one that we are never tired of bringing before the public and the general practitioner. It is false economy—if done for economy—to keep a patient in a workhouse or in a private house when he is distinctly insane. My experience completely corroborates that of Dr. D. H. Tuke, at 'The Retreat,' that over seventy per cent. of cases admitted within three months of the first attack get well; whereas of sufferers from a first or other attack admitted to an asylum treatment twelve months after the onset not twenty per cent. get well."

Dr. JAMES F. GOODHART's paper *On Meningeal Hemorrhage* is founded upon forty-nine cases, thirty-six of which are from the post-mortem records of Guy's Hospital for the last twenty-one years. The rest he has collected from the Transactions of the Pathological Society of London. Eight out of the forty-nine cases are probably, he says, due to injury, and are therefore not available as to the cause of spontaneous meningeal hemorrhage. The remaining forty-one show that in twenty there was renal disease, associated in thirteen instances with hypertrophy of the heart; in two more it is probable that the same conditions existed, and in six others there was hypertrophy of the heart without renal disease. Thus twenty-eight out of forty-one, two-thirds of the whole number, occurred with a state of the kidney or heart which is known to bring about an increase of the blood pressure in the arterial system. To this, therefore, he ascribes the principal influence in the production of the hemorrhage. He believes that the miliary aneurisms of the cerebral vessels, to which M^{rs}. Bouchard and Chareot have called attention, are caused by this high tension and its consequent hypertrophy. That similar aneurisms are not found so frequently in other parts is easily accounted for, he says, by the fact that there are few vessels so little supported by surrounding tissues as are those of the brain.

The symptoms of meningeal hemorrhage appear to be absolutely wanting in pathognomonic significance. Coma was present in fourteen of the cases; it was generally profound, and ushered in death, but in some it was only partial, and in three was temporarily recovered from. Convulsions, contrary to what we should expect, do not appear to be a common symptom, having been noted in only twelve of the cases. Rigidity is even less frequent, having occurred in only four cases. Headache in the occipital region, and pain in the back of the neck were marked symptoms in only four cases. Delirium was occasionally noticed, as also were irregularity of the pupils, stupidity, and incoherence. Sudden death occurred in four cases. The author says that the one symptom which more than any other would lead him to suspect meningeal hemorrhage is "a permanent or rather persistent stupidity after an injury or following upon some convulsive seizure."

The prognosis in meningeal hemorrhage is grave. There is good reason for thinking, however, that recovery occasionally takes place. To relieve the high tension which is so prolific a source of cerebral hemorrhage, no remedy is so effectual, in the author's opinion, as free purgation. It should be resorted to both as a means of prevention, which, if carefully guided, may avert the dangers of an impending stroke, and which, even when the seizure has come, may yet do much good by lessening the blood pressure, and so avert further bleeding. For the same reason venesection will occasionally be useful, especially where after a hemorrhage the pulse keeps hard. Ice should be at the same time applied to the head, and the head and shoulders be raised. If there is hypertrophy of the heart, the tincture of aconite may be given in small doses.

The reader will find in Dr. PAUL HENRY STOKES's paper *On the Use and Administration of Sedatives*, many valuable hints in the treatment of disease. It is not of a nature to be readily analyzed, and we must therefore content ourselves with this brief reference to it.

We learn from the *Fifth Annual Report of the Guy's Hospital Lying-in Charity*; collated from the Records, by A. L. GALLABIN, M.D., that the district comprised by the Charity lies within a radius of about a mile from the hospital, and that the patients are attended at their homes by the students; the assistant obstetric physician being, however, sent for to superintend all

cases in which any obstetric operation is required. The report embraces a period of twelve years from October, 1863, to the end of September, 1875. During this period 23,591 women were delivered of 23,811 children; of whom 22,838 were born alive, and 973 were stillborn; the proportion of the sexes being 100 males to 88 females. The death-rate in children shows, Dr. Gallabin says, a progressive improvement. In the present report it is only 4.08 per cent.; in the last report of nine years it was 4.6; while in the preceding twenty-one years it was 5.2. The mortality among the children in cases of pelvic, arm, transverse, or funis presentation, is, however, high. Taking foot and breech presentations together, the children stillborn are in the proportion of 1 to 2.5.

Of twin cases there were 220, or about 1 in 107 of the whole number of women delivered. In 84 cases the children were both males, and in 61 both females. Only one case of triplets is noted; 86 cases of face presentation occurred, and in 7 of these the children were stillborn. All were delivered by natural efforts, except one, which was extracted by version, and was living. The number of cases in which the funis presented was 62; 8 of the children were living, and 54 stillborn. The brow presented in 16 cases, and 14 of the children were born alive. The upper extremity presented in 61 cases, in 9 of which the funis was also prolapsed. There were 16 transverse presentations, two of them complicated by prolapse of the funis. Taking the whole 77 cases together, 12 were completed by natural efforts, the children being stillborn in 7 cases. In the remaining 65 cases the presentation was rectified by podalic version; 15 of the children only being born alive.

Out of the 23,591 deliveries included in the present report, 121 protracted labours were terminated by forceps; or 1 in 197, or about 0.51 per cent. The foetal skull was opened in 18 cases, or 1 in 1310, or about 0.07 per cent. Seven cases of rupture of the uterus or vagina are recorded, or 1 in 3371 deliveries. Caesarean section was performed after death in one case, but the child was not saved. Delivery after the occurrence of the rupture was effected by the forceps in four cases; by version in one; and by version, followed by craniotomy in one. All the patients died, but one of them lived as long as four days after delivery. In one case the uterus became spontaneously inverted two days after delivery, and the patient quickly died of hemorrhage.

Post-partum hemorrhage directly caused death in eleven cases. In nine cases a solution of perchloride of iron was injected into the uterus; but the measure, the author tells us, was never adopted until the effect had first been tried of introducing the hand into the uterus, clearing out the clots, and compressing it between the internal hand and the other hand applied externally to the abdomen. In all instances the iron injection stopped the bleeding, but in two the patients sank under the effects of the hemorrhage about an hour after; and one woman died from septicæmia on the twenty-sixth day. No successful instance of transfusion is recorded. Forty-one cases of placenta prævia occurred, six of which were fatal to the mother. Of the children, 10 were living; 31 were stillborn. The placenta was adherent, and required the introduction of the hand into the uterus for its removal in 75 cases; or 32 per cent. of all the cases.

28 cases of eclampsia are recorded, or 0.12 per cent., or 1 in 842. In reference to the connection between albuminuria and this complication, we find the author expressing himself as follows:—

“Since it has been recently urged by some that the importance of albuminuria in connection with eclampsia has been overrated, and that uræmia is only one of several common causes which may produce such a result, it may be of

interest to note that, of all cases during the last forty years in which the urine was examined, it remained free from albumen in only two."

Out of 23 cases of eclampsia in which chloroform was administered often for many hours consecutively, there were five deaths, which is a decided improvement upon the death-rate under the old plan of treatment by venesection.

Three cases of puerperal mania occurred, all of which terminated fatally. Death took place from puerperal peritonitis and other forms of septicæmia in thirty-four cases, two of which are reported under the head of post-partum hemorrhage, and two under that of adherent placenta. Nine cases of zymotic disease occurred, including five of variola, in one case terminating fatally; and one each of the following diseases—typhoid and typhus fever, scarlatina, and erysipelas—all ending in recovery. The number of deaths among the mothers was 106.

A Case of *Nitro-Benzol Poisoning*, reported by THOMAS STEVENSON, M.D., occurred through the fault of a physician, who wrote his prescription so illegibly that nitro-benzol was substituted for rectified benzol, the drug intended to be given. The patient took about 23 minims of the poison in the course of about forty-eight hours. When first seen by a medical man the surface of his body was bluish-purple, and cold, and the pulse could not be felt at the wrist. The heart could be heard beating faintly and irregularly. The lower jaw was rigidly closed, but the limbs were flaccid, and dropped powerless when raised. The pupils were widely dilated. No breathing could be perceived. The treatment consisted in the application of sinapisms to the chest, and abundant friction of the limbs for two hours. Later, a secondary current from a magneto-electric machine was sent through the hands and upper limbs. Still later, brandy was administered, and ammonia inhaled. In about six hours from the time the patient was first seen he had begun to react, and the next day was fairly convalescent. Nitro-benzol was detected in his urine. Dr. Stevenson calls attention to the close resemblance of the symptoms in this case to those produced by prussic acid.

Appended to the paper is the prescription, beautifully lithographed, through the misreading of which the case occurred; and also another prescription by the same physician. They are, as Dr. Stevenson says, curiosities in the way of illegibility.

Under the heading, *Remarks on some of the Paroxysmal Neuroses*, Dr. C. HILTON FAGGE discusses a group of diseases, including migraine, paroxysmal vertigo, and mania, epilepsy, and tetany, all of which have, among other characters in common, a tendency to recur paroxysmally at more or less regular intervals, the persons who suffer from them being at other times in apparently good health. Another important character of these diseases is, that they are essentially innate and hereditary. In different members of the same family the inherited tendency may, however, show itself in different ways, one child being epileptic, another asthmatic, a third subject to migraine, etc. Still another feature which is common to them is, their tendency in the same patient to undergo metamorphosis in course of time. This is particularly the case, the author says, with epilepsy; its attacks being liable to be replaced by vertigo, catalepsy, mania, or even other forms of nervous disturbance. Dr. Fagge enters very fully into a discussion of the pathology of epilepsy, migraine, and paroxysmal vertigo, during the course of which he subjects the views of Drs. Hughlings-Jackson, Liveing, Latham, and Menière, to a searching criticism. We are, unfortunately, unable to follow him through this, and will therefore quote only his conclusions in regard to epilepsy:—

"To sum up, I would adopt the language of some modern writers, and say that epilepsy is 'dependent upon an unstable condition of the nerve tissue in some portion of the nervous system, permitting occasional discharges.' This, in reality, is not stating more than that the disease is a nerve storm. And just as in migraine teleopsia may be followed in succession by numbness in the fingers, by headache, by vomiting, by sleep. So in epilepsy, tonic spasms give place to clonic convulsions; and these, again, to stupor or coma. To me it appears more satisfactory to refer this sequence of phenomena to the gradual extension of some morbid condition from one part of the nervous centres to another, than to ascribe it to modifications in the blood supply."

Dr. Pavy, in his article *On the Recognition of Sugar in Healthy Urine*, gives us the details of a process by which he has succeeded in demonstrating the existence of sugar in normal urine. Two or three quarts of healthy urine are first treated with the neutral plumbic acetate, until a precipitate is no longer produced, for the purpose of ridding it of urea, uric acid, and other ingredients. Sugar is not carried down by lead in an acid solution, but if the supernatant liquid is now siphoned and treated with ammonia and plumbic acetate, it falls with the lead as a definite compound, consisting of two atoms of sugar and three of oxide of lead. After thoroughly washing the precipitate to free it of the ammonia, it is treated with sulphuretted hydrogen, which displaces the lead. The product is then subjected to filtration, and after washing the filtrate, the lead washings, which will contain any sugar that may have been present, are brought to a small bulk by evaporation over a water bath. Decoloration is next effected by animal charcoal, which has been thoroughly purified from lime. Reduced to a concentrated form, the product is now ready for the application of the various tests.

With a specimen of the product obtained by the above process, Dr. Pavy obtained, with Moore's test, a dark-brown coloration. The bismuth (Böttger's) test became black. The copper solution gave a copious precipitate of orange-yellow reduced oxide. As long as the solution has an acid reaction, fermentation cannot be excited in it; but it is readily produced if it be brought to the neutral state before the addition of yeast. As the result of his experiments, Dr. Pavy has reached the conclusion that healthy urine contains about half a grain (.565 grain) of sugar to the pint.

In conclusion, the author says:—

"I regard the fact that sugar is susceptible of recognition in healthy urine as of the highest importance with reference to the glycogenic theory. It tells strongly against the validity of this doctrine. I strenuously contend that there is no active destruction of sugar carried on in any part of the circulatory system. If sugar reach the general circulation, whether from the liver or by artificial introduction from without, it is to be discovered in the blood of all parts of the system. Under natural circumstances, the blood contains only a minute proportion of sugar; and still, from this minute proportion, the urine acquires a recognizable saccharine impregnation. Such being the case, what, it may be asked, might be reasonably looked for if sugar were constantly being discharged from the liver, as is maintained under the glycogenic theory?"

J. H. H.

Excluding Dr. Steele's statistical report, the surgical portion of this volume comprises but about one-fourth of its bulk; and of that portion we now proceed to furnish our readers an analytical abstract.

The first article is *On Fractures of the Thigh*, from the pen of Mr. J. COOPER FORSTER, and under this caption he gives a summary of his experience, extending through more than thirty years, in the treatment of fractures of the shaft of the thigh-bone. While expressing great impartiality in regard to the dif-

ferent plans of treatment which have prevailed during the last quarter of a century, Mr. Forster shows a decided preference for the Hodgen splint, claiming that by its use are combined all the advantages of the inclined plane, with its relaxed muscles, and those of the straight splint, with its fixed joint surfaces and extension. As Hodgen's splint is but little used in this country, it is, perhaps, well to state the points of difference between it and the well-known splint of Dr. N. R. Smith, of which it is a modification. Dr. Smith fastened the splint to the limb by a roller closely applied, and extended the splint upon the pelvis, thus confining the hip-joint. Mr. Hodgen attaches strips of cloth to the lateral bars of the splint, and does not allow it to extend above the hip, the limb is then placed in the splint, *resting* upon the strips of cloth, thus reviving the method of action belonging to the double inclined plane. Mr. Forster swings the limb, as did Dr. Smith, so as to obtain some extension directly from the thigh, and also applies adhesive plasters and a weight. That this compound method is an efficient one can be readily seen, and, we have no doubt, may be exceptionally useful. In the great majority of cases, however, we think simple extension by a weight, with lateral compression by sand bags, will be found to give quite as good results as those recorded in the table which concludes Mr. Forster's article. Experience has pretty well demonstrated the fact that some muscular extension conduces to the steadiness of a limb, and there would seem to be little advantage in reviving the inclined plane, with its muscular tremors and startings, excepting where there is special intolerance of other methods. It is proper here to state that Mr. Forster looks upon the smaller weight required, from the absence of friction between the limb and the surface of the bed, as a decided advantage. It is very common to cast suspicion upon the accuracy of the measurements where the results obtained by different plans of treating fractures of the thigh-bone are under discussion, but among competent and careful surgeons one man may be presumed to be about as apt to be correct as another, so that we do not hesitate to aver, that we have seen as little average shortening after the use of the old apparatus, known in this country as Physick's Desault, as is obtained by any other plan, although we have long since adopted the sand bags and weights as more comfortable to the patient, less troublesome to the surgeon, and attended with equally good results.

A very readable paper *On Causes of Preventable Blindness* is contributed by Mr. C. HIGGENS. Three causes are mentioned—granular ophthalmia, purulent ophthalmia, and undetected glaucoma, which are treated successively and in some detail. Granular ophthalmia is seen most frequently among those whose hygienic surroundings are unfavourable, and is confined to those in whom the characteristic anatomical changes, known as granulations, are present on the lids. These cases always extend through long periods of time, despite any treatment which may be adopted, yet the practitioner is encouraged to believe that faithful and persevering attention will generally be followed by improvement, and the disastrous injury to vision, so common a result of neglect or inefficient treatment in these cases, be averted. The treatment by astringents and mild caustics, combined with general remedies, advised by Mr. Higgens, does not differ from the standard practice among ophthalmic surgeons.

Purulent ophthalmia is the second among the preventable causes of blindness referred to in this paper. Prompt and vigorous treatment by strong caustic applications frequently used; with hourly cleansings by astringent lotions, is strictly according to the canon. It is worthy of especial notice that, according to our author, general depletion is scrupulously to be avoided in this highly inflammatory disease, although we believe that most ophthalmic

surgeons, while agreeing with Mr. Higgins on the value of tonics and stimulants, place more dependence upon local depletion than he seems to do.

That portion of the paper which speaks of undetected glaucoma as a very frequent cause of blindness is of great value, for the failure to recognize this condition is too common among general practitioners, and from such failure serious evils very often follow. When a patient over fifty presents himself complaining of impaired vision, with a somewhat dilated and immovable pupil, it is not safe to make a diagnosis of unripe cataract merely because we notice that the pupil has lost its pure blackness; the tension of the ball should be carefully examined, and a comparison made with the unaffected eye, or with that of the observer, and, if increased hardness is found to exist, the diagnosis should be at once made positive by the ophthalmoscope, or the patient sent to one expert in such cases.

A noticeable feature in this paper, and one worthy of high praise, is the comparative absence of special technical terms, so that it appeals directly to the average medical man, who can read it without finding that he has a new vocabulary to learn. In the judgment of the writer there is hardly a greater error into which an author can fall than to indulge largely in technical terms when addressing the general reader. Even so eminent a writer as Mr. Thomas Carlyle would probably have exerted a wider and more permanent influence had he confined his genius within the limits of a more ordinary phraseology and style than that in which his thoughts have been given to the world, and Mr. Emerson, probably, would be longer remembered had he been less Emersonian. While the scientist must perforce sometimes resort to those terms which have sprung into being with the advances they represent, yet the simpler his language, and the plainer his style, the more readily will he find readers. High science, like high art, is only appreciable by a very few. Such papers as this one by Mr. Higgins are much needed at the present day, and ought to be largely appreciated, even though they may contain nothing absolutely new; for, while specialists are often criticized for the narrowness of their work, the every-day physician or surgeon is too apt to allow himself to go uninformed of the progress made in the separate departments of medical science.

The remaining contribution to Ophthalmic Surgery is a short paper on *Retinitis Pigmentosa*, being the *ninth series of a description of the appearances of the human eye in health and disease as seen by the ophthalmoscope*, by Mr. C. BADER. Mr. Bader's pictures are too well known to the readers of Guy's Reports to need commendation. It is sufficient to say that the lithograph is well executed, and the short account of the disease it represents distinct and lucid, so that this number will be regarded as a worthy member of the series in which it finds a place.

Between the two ophthalmic papers is a *Contribution to Dental Pathology*, by S. JAMES A. SALTER, M.B., F.R.S. The subject of hypertrophied dilated tooth-fangs is first discussed in connection with an article published in the volume of the Reports for 1868, describing a case which was the third one upon record. At that time Mr. Salter predicted that the cases published by Tomes and Forget would prove to be identical in nature with his own, and a re-examination of the specimens has verified the statement, and they have been proved to be enlarged and dilated fangs. Another case is now narrated, which occurred in the practice of Mr. Bryant, making the fourth one recorded. The patient from whom the specimen was obtained was a boy, aged eleven years, with the notches of inherited syphilis upon his incisors. For three years there had existed a growth, probably an epulis, over the socket of the left central

incisor. Upon removal of the incisive bone with the overlying soft parts by operation, the left central incisor was found to have an expanded fang, furnishing a beautiful example of the "odontome radulaire," with the pulp as yet uncalcified. Mr. Salter thinks that the abnormal size of the fang acting as an irritant may have had some connection with the growth of the epulis; he also propounds the question whether the syphilitic dyscrasia which existed, was in any way chargeable with the altered form of the fang. As will be seen, the number of recorded cases of this character is as yet too few to admit of generalizations.

The next case was one occurring in a girl of thirteen. A semisolid tumour of the right superior maxillary bone existed, filling up the space between the cheek and the gum, and causing the hard palate to project downwards, while both the lateral incisor and canine of that side were absent. Upon making an incision within the mouth a cavity was opened, projecting from the external wall of which were two osseous masses, that upon removal proved to be the missing teeth, amorphous and hardly recognizable. A speedy recovery ensued. Mr. Salter gives an interesting account of the histology of these masses; he also indulges in some criticism of M. Broca's classification of such tumours, preferring the one adopted by himself, Wedl, and Virchow. For the details of the discussion we must refer the reader to the original article, which concludes with an account of a deformed second upper molar in which the three fangs were almost entirely fused. The paper is illustrated with several woodcuts.

The next two surgical papers are by an author whose name will awaken the memories of a generation almost past; they are entitled *Statistics of Amputations* and *On the Treatment of Ulcers by the Local Application of a Weak Continuous Electric Current*, by C. H. GOLDING-BIRD, B.A., M.B. The first article is intended as a continuation of Mr. Bryant's tables published in vol. xlii. of the *Medico-Chirurgical Transactions*. It includes the record of results obtained in Guy's Hospital during the fifteen years subsequent to those with which Mr. Bryant dealt. Since Norris first published his statistical tables, the contributions to our knowledge of the average results of most of the major operations in surgery have been sufficient to pretty much establish laws, and the tables before us, while helping to make the subject complete, do not differ in conclusion from those which accord with the experience of most large hospitals. We shall not attempt to condense what is already condensed, but pass on to the second paper, which narrates some experiments instituted, together with the results in some cases of treatment based upon the conclusions arrived at by experiment.

To an indolent ulcer a silver plate was applied, and to a neighbouring raw surface one of zinc, and the two plates united by a copper or silver wire. The raw surface was obtained by first blistering and then removing the cuticle, and this was found to be necessary, as when the epidermis was unbroken, no galvanic action was induced. When, however, the cutis was removed in the manner stated, a current between the two plates was at once established, and it was found that an eschar was gradually produced under the zinc from the nascent chloride of that metal there developed, while the ulcer under the silver plate was stimulated into healthy action. After a few days' use of the plates the galvanic action became feeble or ceased altogether, the density of the eschar formed under the zinc interrupting the current, while the tenderness and swelling in the locality became so considerable as to require a change in the position of that pole of the battery. To avoid this undue action

it was found desirable to move the zinc plate to a fresh surface every day. When, however, the ulcer under treatment had a dense lardaceous base, by applying the zinc plate directly to it, the caustic action of the chloride could be taken advantage of and the sore led to take on healthy action upon the separation of the slough.

To obviate the inconvenience produced by the decomposition of the zinc plate, and the suffering attendant thereon, Mr. Golding-Bird resorted to experiments, and found that he could obtain the beneficial results of the galvanic current without drawback by the use of a small independent battery, with silver electrodes. For walking cases an efficient battery was obtained by inclosing plates of zinc and silver foil in lint, separated from each other by the same material, moistened with salt and water. When patients were confined to bed a one-, two-, or three-celled sulphuric acid battery was used. In either case the silver electrodes were applied one to the sore and one to an adjacent part. By the experience thus obtained it was found that equal effects were produced, whether the fluids of the patient formed part of the battery, or if he were subjected to the current of one entirely external to himself. The experience of Mr. Golding-Bird, together with that of others, leaves no room for doubting the efficiency of electrolysis in the treatment of indolent ulcers, while it is admitted to be equally certain, that, like other stimulating dressings, it is only valuable for a limited period of time. Experience has also taught many surgeons to regard almost in the light of law, the fact, that variety is the spice of life for an ulcer.

A Case of Fracture of the Skull, followed by a Collection of Cerebro-spinal Fluid Beneath the Scalp, Recovery, by R. CLEMENT LUCAS, B.S., is next in order, and transcribing the title seems almost to have effected an analysis of the article. The case was, however, an interesting one, and of such rarity as to warrant the presentation of some of its details. A child two and a half years old fell from a window to the ground, a distance of eighteen feet, and had some slight cerebral symptoms immediately after the accident. When first brought under observation, three weeks after the receipt of the injury, the child was peevish, fretful, and lacking in animation, though presenting an intelligent expression. In the left temporal region were two circumscribed tumours, of the shape and size respectively of a pullet's egg and a walnut, connected together, extending from within an inch of the orbit nearly to the posterior margin of the parietal bone. The lateral bulging was sufficient to press downwards and outwards the pinna of the ear; they were both fluctuating, but without pulsation, though becoming more tense when the child cried, and the contents of one could be pressed into the other through the narrow isthmus which united them at about the junction of the temporal and parietal bones. The temperature and pulse were normal, and no discomfort appeared to attend manipulation of the swellings. Mr. Lucas punctured one of the tumours with an aspirator, drawing off two ounces of fluid, which in appearance, and upon analysis, seemed identical with the cerebro-spinal fluid. Upon the subsidence of the tumours, which occurred at once, a depressed, stellated fracture of the skull in the region of the lateral fontanelle was very apparent, and it seemed as if the Wormian bone had been driven in. There was no corresponding absence of bone on the opposite side. Within a few hours the tumour filled up again and then gradually subsided. Three months afterwards there was a small circumscribed swelling back of the ear, containing about one drachm of fluid, and the depression over the site of the Wormian bone could still be felt. The child continued strong and well nourished, but had neither spoken, nor attempted to walk since the accident.

Cases presenting a group of symptoms like the above are rare. Mr. Prescott Hewett, in Holmes' Surgery, speaks of ten cases in which effusion of cerebro-spinal fluid accompanied compound fractures, which, however, like those in which large amounts of fluid escape from the ear, have no resemblance to the one recorded by Mr. Lucas. Mr. Warrington Haward and Mr. Erichsen each narrate a case in which this fluid accumulated beneath the scalp in simple fractures; in both cases the tumours were tapped, and the patients died. The case recorded by Erichsen occurred in a hydrocephalic infant, those of Messrs. Haward and Luens in normal children. Mr. Lucas is inclined to think that the best treatment in these cases is to let them alone, and in thus furnishing a criticism upon his own course, renders comment by us unnecessary. He also very justly questions the permanence of the recovery which appears to have taken place in his patient.

A perusal of Dr. Keen's paper upon chloral as a preservative, published in this Journal, July, 1875, induced Mr. H. G. Howse, M.S., to make a trial of that agent, and a *Note on the use of Chloral for the preservation of subjects and anatomical preparations* gives his conclusions as to its value. Half a pound of chloral proved in his hands a tolerably efficient preservative for winter subjects, but inferior to glycerin and arseniate of soda as recommended by himself in volume xvii. of the Reports, although he thinks the translucency of the tissues so objectionable when this last method is resorted to does not obtain when chloral is used. In summer his experience leads him to regard Keen's method as unreliable. Mr. Howse, however, thinks that very possibly the difference which exists between the climate of Great Britain and that of the United States may account, in some measure, for the different results obtained by Dr. Keen and himself. For the preservation of urine, or small specimens, he thinks a solution of chloral is very useful.

The usual *Statistical Analysis of the Patients treated in Guy's Hospital*, by J. C. STEELE, M.D., concludes the volume. In this article, as in its fellows, there will be found much subject for thought, with suggestions which should be of service to all those connected with the management of large hospitals. It is short and condensed, and will well repay perusal by those belonging to the class referred to above. The tables are hardly as well arranged as those which emanate from St. Bartholomew's Hospital.

Taken as a whole, the surgical papers of this volume do not seem to be up to the average of those which have hitherto made this the best, as it is the oldest series of hospital reports.

S. A.

ART. XXX.—*Transactions of American State Medical Societies.*

1. *Proceedings of the Connecticut Medical Society*, May, 1876. 8vo. pp. 157.
2. *Transactions of the Medical and Chirurgical Faculty of Maryland*, April, 1876. 8vo. pp. 165.
3. *Transactions of the Iowa State Medical Society*, 1872 to 1876 inclusive. 12mo. pp. 224.
4. *Transactions of the State Medical Society of Arkansas*, 1875-6. pp. 100. Little Rock, Ark., 1875.
5. *Transactions of the Medical Association of the State of Alabama*, April, 1876. 8vo. pp. 270.
6. *Transactions of the South Carolina Medical Association*, April, 1876. pp. 91.
7. *Transactions of the Medical Association of the State of Missouri*, April, 1876. pp. 79.
8. *Transactions of the Medical Society of the State of California*, April, 1876; pp. 168.
9. *Transactions of the Medical Society of New Jersey*, May, 1876; pp. 314.
10. *Transactions of the Medical Society of the State of Pennsylvania*, May and June, 1876. pp. 386.

1. We observe that an attempt is making in the *Connecticut Society* to elicit the opinions of physicians all over the State, by circular letters of inquiry, especially respecting the prevailing beliefs and ideas concerning diphtheria. Replies have not been at all as numerous as might have been hoped. They indicate, however, a belief in the distinct nature of the disease, in its constitutional character, and in the need of supporting treatment. Tincture of iron is the one tonic almost unanimously trusted.

Dr. Paddock, of Norwich, describes a human monstrosity in which the two eyeballs, partly conjoined, were placed in one central orbit, and the nose, wanting in the natural position, was represented by a fleshy appendage to the forehead above the eye. The child was born alive, but died almost immediately.

An article on Laryngeal Phthisis by Dr. Chamberlain, and two or three brief papers and obituaries, with some essays which possess little novelty, complete this publication. The work is neatly printed and has two or three coloured lithographs of pathological specimens.

2. In the transactions of the *Maryland Faculty* we find the orthodox, and much to be dreaded, annual oration. This time, however, we meet with an agreeable surprise. Dr. Roberts Bartholow discusses, in a very pleasant and instructive manner, the Degree of Certainty in Therapeutics. While thoroughly alive to the worthless nature of much so-called evidence as to the virtues of drugs and other means of treatment, the orator takes no dismal or faithless view of the physician's armament. Both aims and results of treatment are more definite and more certain than of old. The value of physiological experiment on animals in determining the action of drugs is highly appreciated, and defended from its adversaries. The humiliating errors and uncertainties of empirical therapeutics are well set forth. The supposed virtues which medical experience has attributed to drugs should be tested by physiological experiment.

A Report on Surgery from a standing committee, notes the advanced ideas and improved methods of the day. The author of this report, Prof. Christo-

pher Johnston, relates a case of vesical exstrophy in which he operated essentially by the method of Wood. After etherization—

"A great umbilical flap was brought down over the bladder, the skin surface lying under, and this was covered by two wing flaps, one from either groin, which met in the middle line, and were secured to the first oblong flap. The space left by the umbilical flap was almost effaced by drawing together the integuments of opposite sides, and which had been dissected up; while the spaces left by the wing flaps were obliterated by a gliding of the skin which lay beyond the groins, made free underneath, and attached to the outer border of the wing flaps, now fixed in their new situation by silver and iron wire. As tension strained the lateral flaps, a crescentic incision was made beyond each groin to reduce it. After the operation the little patient suffered exceedingly, principally on account of scalding by the urine; but in about five weeks he was able to return home greatly benefited, the operation having proved a success, perfect with the exception of a small loss of substance at the lower edge of the umbilical flap. In its present condition the child will remain until cicatrization shall have completed its contraction, whereupon a second operation will be attempted, having for its object the formation of a sort of roof for his urethral groove. As things are, however, the urine escapes over and around the penis only, and he is able to wear advantageously a railroad urinal."

In supplemental reports, some account is given of recent progress in ophthalmology, the contra-indications to the enucleation of ruined eyes are presented, and the treatments of ophthalmitis and urethral stricture are discussed.

Prof. Abram B. Arnold contributes a paper upon Phthisis. This is chiefly a sketch of the different views of this disease held at different times, tracing especially the changes in medical opinion which have occurred during the last few years.

In a report from a committee or section on Psychology and Physiology, Dr. Conrad treats of Insanity in its Financial Relations to the States. The Doctor modestly states that his special experience has been of limited extent and duration. This very plainly appears in his paper.

Dr. J. B. Gibbons describes a cure of empyema by aspiration, in a child of less than four years. During nine months, thirteen pints of matter were drawn off, in five tappings.

Cases of obscure abdominal disease are reported by Dr. W. C. Van Bibber. A few cases of cure of peripheral paralysis are presented by Dr. John Van Bibber to illustrate the importance of treatment addressed to the muscle. In the January number of this Journal (p. 228), we referred to his valuable suggestions as to "elastic relaxation." By this means, by *massage*, by position, by electricity, the circulation and nutrition of paralyzed parts can be maintained, and recovery rendered more speedy and more complete.

Prof. Frank Donaldson presents an analysis of Thirty-seven Operations of Thoracentesis by Pneumatic Aspiration. His experience is every way favourable to the safety and great value of this treatment.

3. The pamphlet of the *Iowa Society* is largely composed of brief essays or addresses. Some bear the aspect of being written because the writers were appointed to prepare something, rather than because they had anything especial to say. A good deal of information is conveyed, but very little not to be found in the text-books.

A case of hernia of the ovary is reported by Dr. Benj. McCluer. The organ protruded through the saphenous opening, and was removed on account of pelvic and abdominal pains, and some inflammatory symptoms at the periods of menstruation. No ill results followed its removal.

Dr. Ady reports a case of extraordinary prostration, apparently from malarial poisoning, in which the disposition and the ability to breathe were at first greatly lessened and at last destroyed. From five or six respirations a minute, the breathing gradually failed, in spite of all efforts to arouse and stimulate, till in an hour it had wholly ceased. The patient, at first responding to loud orders, sank into profound insensibility. The pulse at the wrist ceased. Feeble motion of the heart only remained. Artificial respiration produced, in a minute, a gasping inspiration, and a fluttering at the wrist. Half a drachm of aqua ammoniac with as much water was injected into cellular tissue above the clavicle. No obvious result appearing, in a few minutes one drachm of tincture of cantharides was injected below the collar-bone. This seemed soon to raise the pulse. Artificial respiration was kept up to supplement the natural, which, however, soon became more frequent, and in an hour was normal. Large doses of quinia were given, and no subsequent paroxysm occurred. Twenty-four hours previously, he had experienced an attack almost as alarming. Abscess and sloughing followed the ammonia injection, but no trouble resulted from the cantharides.

Dr. Drake reports two cases of adenia or Hodgkin's disease. Both died.

Dr. Farnsworth sets forth the duty of the State in connection with the public health. He exhibits with considerable force the need existing in his State of proper sanitary supervision, and public enlightenment.

4. In a report upon the health of Little Rock we find the negro population referred to as furnishing four or five times their proper proportion of deaths. Consumption is said to be peculiarly fatal among them. The writer adds that "it was very seldom observed" while they were in slavery. Another writer mentions the extreme rarity of erysipelas among negroes.

Dr. Shibley believes gossypium to be far superior to ergot in promoting expulsive uterine efforts, but inferior in arresting bleeding.

Dr. Welch removed by aspiration twenty-eight ounces of pus from the pericardial sac. Great relief followed, but death occurred a few days later.

A number of brief reports of cases are given, of which we need name only one of extra-uterine pregnancy, in which the fœtus was retained thirty years, and one of eoredialysis. Others are interesting and instructive, but present no points of especial novelty.

5. From the proceedings of the *Alabama Association* we learn that although the legislature a year ago constituted that body a State Health Board, it made no appropriation for expenses. The society now asks for further legislation appointing a health officer. Vigorous efforts continue to be made to obtain the passage of a proposed act to regulate and elevate the practice of medicine.

Two long and elaborate papers constitute the bulk of this volume. The first is a prize essay on the Pathology and Treatment of Bright's Disease, by H. D. Schmidt. One especial aim of the writer is to compare the organic changes in this disease with those observed in yellow fever. He strives to show, moreover, that in the cases of Bright's disease arising in his section of country, malaria is an efficient cause—setting in motion the train of morbid actions which finally results in the affection of the kidney. It is the author's observation of the disease, under his own peculiar climatic conditions, that gives the essay its chief value, though the entire paper exhibits evidence of study and of original research.

Under the name of hemorrhagic malarial fever, Dr. R. D. Webb presents a minute description of the disease often designated as malarial hæmaturia. Whatever may be the fact in Europe, the malarial fever, with hemorrhagic ten-

dencies, observed in the Southwestern States, is the same disease, whether the effusion takes place in the kidneys, stomach, bow els, gums, nose, womb, blistered surfaces, or the substance of the tissues. The writer does not, however, mean to deny that hæmaturia is the most common and characteristic symptom of the malady. But not being constantly present the symptoms should not be taken as the name of the disease. Yellowness of the skin and excessive nausea are symptoms almost uniformly present. The paroxysms and remissions which mark the malarial origin are commonly, though not invariably, quotidian. Suppression of urine sometimes occurs after two or three paroxysms, and is apt to result in death from uræmic poisoning. If the disease is not checked before the fifth paroxysm profound and fatal prostration appears.

From the suddenness of the cutaneous discoloration, and absence early in the disease of any tokens of suppression or reabsorption of bile, Dr. Webb believes it to be due to effused hæmatin and not to biliary pigment.

The disease is by no means confined to persons debilitated by repeated attacks or continued influences of a malarial character. It attacks people in good health, and even those who have never before suffered from the effects of miasma.

The author doubts if the forms of disease with renal hemorrhage described by European writers are identical with the one here described. His comparison of the different features of various hæmaturial diseases and his whole examination of the symptoms, pathology, and causation of the malady, as observed in Alabama, are full, able, and instructive.

6. The present publication of the *South Carolina Society* has little matter calling for notice. A fatal case of epithelioma of the vocal chords; one of trephining the cranium, with relief to paralytic and convulsive symptoms; an amputation for femoral aneurism; and a case of paroxysmal hæmaturia, are reported.

7. The *Missouri Transactions* contain a few reports of cases having some points of interest. One account of an operation for the relief of neuralgia by the removal of the infra-orbital nerve and Meckel's ganglion, illustrates the danger of chloroform as an anæsthetic. Two or three times the dissection had to be suspended to bring the patient to life, as, whenever rendered insensible, he ceased to breathe. This unpleasantness led to a hasty termination of the operation, apparently *without removing the ganglion*. The object of the operation, however, was to a considerable degree attained. Dr. Prewitt reported the case, after hearing the presidential address, which contained an account of several cases of Nerve-section for Neuralgia.

The cases of President Hodgen, above mentioned, were, two of the second branch of the fifth nerve, four of the third branch, and two of nerves of the lower extremity compressed by abnormal growths.

In describing a case of blepharospasm, Dr. Dickinson gives a curious history of permanent disturbance of the nervous system following stroke by lightning.

Dr. Steele treats of torticollis in a very practical and sensible manner. He describes a device for obtaining elastic extension, by sticking plaster and India-rubber bands, which seems likely to be of use in connection with other treatment.

8. Most of the papers in the California publication are quite brief and not especially noteworthy. They exhibit, however, a commendable pride and interest in the honour and the advancement of the profession. A committee upon Medical Education, reporting through Dr. Montgomery, advocates a

higher standard of requirements than is required and attained by most of our medical schools.

Obscure forms of epilepsy and the responsibility of epileptics, are treated in a paper by Dr. Shurtleff.

Dr. Dubois describes some convenient devices for applying water in motion, for the purpose of reducing the bodily heat in febrile states.

We notice from the minutes here printed, that female physicians have been admitted as members of the Society.

9. The large and handsome volume published by the New Jersey Society is more than half filled with reports from county societies. Diphtheria appears to be the only disease that has been unusually prevalent throughout the State. One practitioner claims to have treated one hundred and fifty cases, out of a population of eight hundred souls.

Dr. J. S. Cook contributes an interesting essay upon climate.

In a paper by Dr. B. R. Bateman, upon Mental Pathology and Criminal Law, is a somewhat violent but very loose attack upon the plea of insanity as offered in criminal cases. Indignation at the setting at large of a homicide acquitted on this plea, is perfectly natural and proper. But surely the fear of this result should not prevent an expert from giving evidence, nor induce a jury to ignore it. It is not allowable to do one wrong in order to avert another. As to a certain case cited by the writer, we are forced to believe that he was not cognizant of the very strong evidence of insanity which was placed before the jury.

The attention of the district medical reporters having been directed especially to the true therapeutic value of mercury, and to the usefulness of topical applications in malignant sore throat, we find a somewhat general and differing expression of opinion on these points. We judge that mercurials are much used and highly prized by the profession in New Jersey, but administered with a much more sparing and discriminating hand than was the practice in former years. The discussion of the mode of action of mercury, and its use in various conditions, is quite full and instructive.

Among a number of interesting reports of cases, we find one of paralysis and gangrene attributed to embolism, in patients who had formerly suffered from acute rheumatism. Dr. G. T. Welch reports a case of membranous enteritis. Fatal chorea in a girl of eighteen, is reported by Dr. A. W. Rogers. Dr. D. A. Currie describes two cases of abscess of the larynx.

10. In the minutes of the annual meeting of the *Pennsylvania Society* we find a draft of a law to be proposed for passage by the State Legislature, in place of the Act passed in 1875 for the regulation of medical practice. The latter enactment was so unskillfully drawn as to be practically inoperative. There is also presented an exact statement of the facts in connection with the attempt recently made to force homœopathic affiliations upon the staff of the Harrisburg Hospital.

A committee appointed to prepare a petition to the Legislature for additional provision for the insane of the seven southeastern counties near Philadelphia, make a powerful statement of the existing need, and a moving appeal for justice and mercy.

In the Address on Obstetrics, Dr. R. Davis describes a new method of dealing with *placenta prævia*. It was suggested by the partial-detachment process of Dr. Barnes. The separation is to be made towards the nearest or the least firmly adherent edge of the placenta, and that, when reached, is to be brought

down and fully engaged in the os. The other segment of the placenta is not to be detached. The membranes being ruptured, labour proceeds without serious hemorrhage, without the necessity of version, and with diminished danger to the child. The procedure is claimed to be identical with that which takes place when Nature, unaided, deals successfully with this complication.

The Address in Surgery, by Dr. D. Hayes Agnew, is full of wise suggestions and sound judgments. After full and careful trial, Dr. Agnew gives his earnest approval to the antiseptic treatment of wounds, as advocated by Lister, of Edinburgh. He warns his hearers, however, that, to avoid disappointment and failure, even the apparently trivial details must be carefully attended to. A new and simple apparatus for treating the fractured patella is suggested and pictured in this paper.

The proofs of the agency of water and of milk in conveying the germs of disease, form the principal subject of the Address in Hygiene, by Dr. Benjamin Lee.

In the Alleghany County Society report we find narrated a sad story of culpable blundering, by which the youthful inmates of a so-called reform school were poisoned by polluted water. What amount of skill and tact in the supremely difficult work of moral reform can be expected, or could be efficient, in the presence of such murderous stupidity?

The Berks County report is principally occupied with an analytical examination of the facts in regard to a recent severe epidemic of scarlatina in Reading. The report was prepared by Dr. W. F. Muhlenberg, and is a valuable contribution.

Dr. Herr, of the Lancaster County Society, reports a case of well-marked scurvy arising in a woman who persistently refused vegetable diet, though living amidst an abundance of such food.

Dr. Rothrock, after practising for nearly half a century in Mifflin County, not only believes in a "change of type," from sthenic to asthenic, some thirty years ago, but also thinks that the last five years have seen a reaction commencing towards the former condition. The great diminution in the prevalence of miasmatic and typhoid fevers, dating from 1850, is, he tells us, connected in the popular mind with the opening of the Pennsylvania Railroad.

Dr. Hiram Corson, of Montgomery County, makes a vigorous plea for resection in commencing pneumonia.

The report of the Philadelphia County Society, besides mortuary tables, contains a map so tinted as to exhibit the varying mortality from typhoid fever in different districts. This is very curious and suggestive. The entire Delaware River front is deeply coloured. It will be remembered that sewers pour their contents into the docks, and that portions of the water supply are derived from that stream, while the tidal movements tend to diffuse its pollutions in all directions. A deeply-tinted belt also crosses the city, filling the space from river to river between Market and Spruce streets. A similar space directly north seems unusually free from the disease, especially at its eastern portion, where it makes a slight break in the otherwise continuous fever-line of the Delaware. We observe, however, a marked discrepancy between the figured mortality of some wards and the tints imparted to them on the map. The eighth, with a mortality less than the twenty-fourth (3.54 per 10,000 living, against 3.72), is made much *darker*. If we change the tint of the former ward to that even of the latter, the *dark belt across the city* disappears. There would seem to have been some error here. Tints and figures (mean, 6.53) agree, however, in showing the greatest mortality from typhoid in the wards

inclosed by the Germantown Road, Lehigh Avenue, and the Delaware, and traversed by Aramingo Creek. In West Philadelphia "Mantua" and the Twenty-fourth Ward bears to "Hamilton Village" and the Twenty-seventh the favourable relation of 3.72 to 5.11. In the latter ward, the colour seems to deepen along Thomas's Run, Cobb's Creek, and at Darby. The wards containing Chestnut Hill, Germantown, and Frankford, exhibit the smallest mortality. Those containing Manayunk and the Falls make a much less favourable showing.

B. L. R.

ART. XXXI.—*A Practical Treatise on the Diseases, Injuries, and Malformations of the Urinary Bladder, the Prostate Gland, and the Urethra.* By SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Prof. of Surgery in Jefferson Medical College, Phila. Third Edition, revised and edited by Samuel W. Gross, A.M., M.D., Surgeon to the Philadelphia Hospital. 8vo. pp. 574. Philadelphia: Henry C. Lea, 1876.

It is now some twenty-two years since the last edition of this work appeared. In the present issue a number of changes are to be found. Among them are the omission of ninety-two pages on the anatomy of the urinary organs, and of the chapters on worms in the bladder; fœtal remains in the bladder; serous cysts and hydatids; hair and air in the bladder. Also the chapters on urinary deposits, on cystic disease of the prostate, and on inflammation of Cowper's glands have been either entirely cut out or relegated to subordinate positions under more general heads. There have been added as new material, chapters on rupture of the bladder, and evidently with the idea of rendering completeness to the work on vesico-vaginal fistula, and on prostaticorrhea. These, with the chapters on the malformations of the prostate, on the injurious effects of operations on the urethra and on prolapse of the mucous membrane of the urethra in the female, constitute the main differences in the table of contents between the earlier editions and the one now put forth. To assist him in bringing the subjects treated up to date, the venerable author has called in the able services of his son, Dr. S. W. Gross, who not only has acted as general editor, but has contributed valuable chapters on the tumours of the bladder and of the prostate gland.

In these latter, in addition to the consideration of the fibrous and myomatous tumours of the bladder, the editor devotes considerable space to an excellent *resumé* of the subject of the so-called villous growths or papillary fibromas, based upon the analysis of twenty cases of this affection. Its usual site in the vesical triangle, its comparative painlessness, absence of secondary glandular enlargements, and its occurrence either in infant or adult subjects under forty-four are well brought out in a table in contrast to the symptoms presented by carcinoma, with which it is frequently confounded, and due importance is given to the value of the microscopical examination of fragments, not epithelium, discharged with the urine. A table of sixteen cases wherein removal of tumours of the bladder by operation was performed, four of which occurred in males, closes the chapter. The neoplasms of the prostate are also fully detailed, and the description of carcinoma of this gland may be considered the best in our language.

The limits of a review of a work that has reached its third edition does not permit an extended analysis, hence we must pass over the chapters on cystitis, retention, etc., to those on lithotripsy and lithotomy. These are well written,

and are the most satisfactory in the whole volume. Credit is given Santorio for his invention of the lithotrity canula in 1626, and to Cuicci for the "tenacula tricuspis" which he describes in his "Promptuarium Chirurgicum" published in 1679, and in which instrument, it will be recollected, he had such faith that it was three times used upon himself.

In the 1613 cases of lithotripsy collected by the author, it is shown in support of the views of Vandyke Carter, that 1067 had nuclei of uric acid or of the urates, 317 of oxalate of lime, and 183 of phosphates, though neither Carter's explanation of the spontaneous fracture of calculi nor his investigations with those of Rainey and Ord upon the importance of colloids in the formation of calculi are referred to.

For sounding, Dr. Gross recommends the position on the left side of the patient, which certainly is much less serviceable to most surgeons than the right side; and it is noticed that no mention is made of the manoeuvre of, after a stone is first seized with the lithotrite, sounding with the calculus in its jaws in order to detect the presence of other calculi. While the points to be observed in lithotripsy are well and clearly given, yet the old rules are enjoined, viz.: "that any chronic cystitis that may exist should be met by appropriate measures until the bladder is enabled to hold about four ounces of urine with comfort, and preliminary injection of the bladder will (then) be rendered unnecessary."

Thompson, it is known, advises the operation even when only one ounce of urine is contained in the bladder, and with others condemns the preliminary injections.

The same injection of the bladder is advised and resorted to by Dr. Gross prior to lithotomy, "in old subjects affected with excessive irritability of the bladder with a constant desire to micturate." It is proper to allude in this report to the vast personal experience of W. Poulett Harris, in 365 lithotomies, who speaks in this way concerning this injection: "No injection should be given when the bladder is so irritable as to be incapable of retaining any fluid, but the operation may be proceeded with, and will be found almost as easy and successful as if the bladder contained fluid." Other authorities entertaining these ideas might be quoted. The comparative results of the cutting and crushing operations in the hands of the same surgeons, gives a mortality of 1 in 11.55 for lithotrity and of 1 in 3.74 for lithotomy. Thompson's own statistics give a mortality for lithotrity of 1 in 17.11, and for lithotomy of 1 in 4.82 cases. A knowledge of the former success is perhaps of more service to the general surgeon than Thompson's results. No record is presented of Dr. Gross's own efforts in lithotrity, though in connection with lithotomy we learn that this operation has been done by him 140 times; 74 times in adults with 11 deaths, and 66 times in children with one death.

Prof. Gross, with many other surgeons, fails to perceive the advantage of Dolbeau's perineal lithotrity. It is, however, to be regretted that Dolbeau's excellent forceps for crushing an extra large calculus should not have been depicted rather than the one shown on p. 255. The convenience of Prichard's anklets renders them so much superior to the old-fashioned fillet that their omission naturally excites comment.

The following directions raise a query: "A stone may be entangled in the folds of the mucous membrane, or it may be spasmodically grasped by the bladder. . . . In the latter case the surgeon desists for a few minutes, until the organ relaxes its convulsive grasp, when the foreign body is seized and

extracted. Should the spasm be severe and refuse to yield, it may be overcome by anaesthetics." Does Prof. Gross operate without the use of anaesthetics? A reference to a previous page is necessary to correct this impression. The article on lithotomy concludes with a table presenting the mortality met with in the various methods of this operation. Unfortunately no distinction is made between impubic and adult patients. The figures given are as follows:—

Lateral operations,	10,150 cases;	1 death in	9.11 cases.
Bilateral	" 536 "	1 "	13.07 "
Median	" 350 "	1 "	10.93 "
Recto-vesical	" 83 "	1 "	5.18 "
Supra-pubic	" 465 "	1 "	3.44 "

It will be found that in the consideration of the inflammatory complications of operations on the urinary organs, Professor Gross advises, in accordance with his well-known views, the use of the lancet, and in the immediate after-treatment of lithotomy or perineal urethrotomy omits the useful caution of suspending the scrotum. His directions for the treatment of calculi in females are practical, and he indorses the dilatation process of Simon, the rules for which are fully given in the chapter on tumors of the bladder.

In Chapter XI. on foreign bodies in the bladder, Denneé's paper is quoted; but the point that Foucher reiterates is somewhat obscured; it is, that in a total of 127 cases, lithotomy was resorted to, prior to 1839, 100 times, and extraction 27 times; but, that since that period, owing to the use of the lithotrite and the improvement in instruments for extraction *per vias naturales*, lithotomy was done only in 21 cases, and extraction in 101, in a total of 122 cases.

Space is insufficient to dwell upon the chapter on rupture of the bladder, save that attention is called again to the advisability of resorting to the lateral section of the prostate as for lithotomy which has been successfully done by Walker and Eskiue Mason. In the fistulas, Chapters XIV.-XV., communicating with adjacent organs, as vesico-vaginal, vesico-rectal, etc., but three or four lines are given to the vesico-intestinal communications; nor is any allusion made to the use of coloured injections, as milk, ink, etc., as aids in the diagnosis, nor of colotomy as a mode of relief.

In the description of the diseases of the prostate, Dr. Gross's work is again characterized by a large experience and much personal investigation. The satisfactory presentation of the disease styled prostatorrhœa, by Dr. Gross in 1860, but according to Bismstead described in 1853 by Adams, and by Ledwich in 1857, is worthy of notice. Under this head are embraced those discharges, not seminal, that result from a "preternatural afflux of blood to the prostate and neck of the bladder, or to the posterior portion of the urethra. For treatment Goulard's extract, with the wine of opium in the proportion of two drachms of each to ten ounces of water, applied three [*sic*] times a day by means of the catheter syringe, is preferred." "In obstinate cases cauterization of the prostatic portion of the urethra or even of the entire length of the canal may be necessary, the operation being repeated once a week." The other and milder measures suggested will, it is to be hoped, obviate the risks attendant upon either of the above somewhat severe procedures.

The results obtained from the examination of 289 men past fifty years of age, are interesting as showing that about one in every five were affected with senile hypertrophy of the prostate, a less proportion than that given by Thompson. The results obtained by Iversen in his observation of 210 persons of all ages are, however, not referred to, though that author is quoted (but with name

misspelt), in connection with his observations on prostatic calculi, which, *en passant*, are *not* due according to that observer to an amyloid transformation of the epithelial cells, as is stated on p. 477 of the present volume. To the statement that in hypertrophy of the prostate, in "no instance, however, has the development of glandular elements been demonstrated," some exception must be taken. Though rare, it does exist. Thompson records such with the microscopical appearances. Iversen ascribes the hypertrophy to a myo-adenomatous hyperplasia, and Rindfleisch says, that the hypertrophy arises from a "fibro-muscular overgrowth of the peritubular stroma of single segments of the gland with a coincident elongation and multiplication of the tubules themselves."

The description of the symptoms and effects of the disease are fully and explicitly given and the treatment also. The latest wrinkle, so to speak, of Heine's injections into the glandular substance of tincture of iodine, is detailed. Its risks, it is said, must be borne in mind. Recent reports from Vienna show that it has proved too hazardous to justify its continuance; in fact Heine's own reports are not encouraging. The treatment suggested by Iversen, based upon Hildebrandt's success in uterine tumours, of the injection of ergotine, is not referred to, though the internal use of ergot to increase the expulsive power of the bladder is advised. It would have been appreciated by the surgical public had Prof. Gross, in speaking of the value of the supra-pubic opening, or the removal of an enlarged middle lobe, or cystotomy, in the severest forms of hypertrophy, expressed more clearly which of these operations was most to be recommended, as his personal experience in such cases has probably been unequalled by any one on this side of the Atlantic.

In fact, it is in this very particular that the present work is disappointing. There is much that is of value as a compilation from both author and editor, but more dogmatic statements on doubtful points would have been preferred by the profession at large, and from a surgeon of Dr. Gross's eminence was naturally to be looked for.

The portion assigned to the diseases and injuries of the urethra opens with a hiatus. Not a word is assigned to the subject of gonorrhœal or other inflammations of this canal. In other respects, its malformations, diseases, and injuries are fully treated.

Where the urethra is lacerated to any extent, the following most sensible advice is given, and, as it is too seldom acted upon, it is quoted at length. "The only rational treatment is to make a free incision into the part, to afford a free exit to the urine, which will otherwise be sure to insinuate itself rapidly into the connective tissue of the perineum and scrotum. The operation is conducted upon the same principles as that of external urethrotomy, without a guide. If the urethra be completely and cleanly divided across, its ends should be approximated with a single suture, and union be favored over a soft gum catheter. . . . Under ordinary circumstances a catheter need not be retained in the bladder."

In so recent a work as this the consideration of penile fistula ought certainly to have embraced Szymanowski's remarkably successful plastic method for the closure of such openings. The pages occupied by the subject of stricture are of special importance in relation to the confirmation that is given to Thompson's localization of such affections. Of 173 strictures occurring in 100 living subjects, 44 per cent. were found in the bulbo-membranous region; 28 per cent. in the spongy urethra, and 28 per cent. within two and a half inches of the meatus. These results, it will be seen, though differing in percentages, confirm Thompson's statements. The statistics of Otis, quoted in a subsequent

paragraph by the editor, are, as has been shown elsewhere, not sufficiently accurate to allow of deductions being drawn from them.

The impassability of strictures to instruments, though permeable to urine, is reaffirmed by the author, who has, we learn, performed perineal section (*i. e.* without a guide) 26 times. By reference to Thompson's work on structure of the urethra, 3d. ed., 1869, it is to be noted with some surprise perhaps, that up to that time that surgeon has never performed this operation—for impermeable stricture—a condition considered by him to be extremely rare. Dr. Gross gives, unfortunately too briefly, details of a case, one out of four that he has met with, of truly impermeable stricture, but the cause of the occlusion is not stated. This is unfortunate, as Thompson, it will be recollected, insists that these are always of traumatic origin.

Dr. Gross advises for the detection of a stricture the use of "a common silver catheter, large enough to fill without distending the meatus." In a similar way the bougie à boule is recommended.

Prior to the treatment of a stricture, or as the author expresses it, to the "permanent cure" of a stricture, he advises if the urethra is irritable the use of sounds and soothing injections; also, he says, "Great benefit may be derived, especially if the part be studded with granulations, from cauterization with nitrate of silver. The operation is performed with the porte caustique . . . the caustic is brought fairly in contact with the affected surface by a rotary movement of the instrument. . . . Too much stress cannot be placed upon this preliminary treatment; indeed, I should consider it highly culpable to neglect it under any circumstances."

In this respect it must be stated that the accepted practice of surgeons varies much from that enumerated above. Indeed, it may be said, that the use of caustic applications to the urethra is felt to be rarely necessary in this or any other difficulty of the urinary passages.

In the reasoning that naturally follows the question as to the method of treatment to be adopted in a case of stricture, the consideration of the normal size of the urethra comes up, and both the author and editor give their adherence to the views of Dr. Otis on this subject. The editor in a foot-note lends confirmatory evidence to the correctness of the estimate of the relation supposed to exist between the circumference of the penis and the urethral calibre.

Proper value is given to the urethrometer as a means to be resorted to in the estimation of the capacity of the urethra in each individual case, though dissent must be made to the rules set forth in the otherwise fair representation of the present views on this point, viz., "that the circumference of the bulbous portion is greater by two millimetres and a half than that of the spongy portion, and that the canal should be dilated as can easily be done to twice that extent, which represents its real size when it is ordinarily stretched." The difference between the spongy portion and the bulbous portion is really much greater than this. According to measurements given by Dr. Sands, in the discussion on gleet before the New York County Medical Society, January, 1876, there existed between the circumference of the spongy and bulbous portions a difference averaging in the cadaver of about 13 mm., and in the discussion that followed it was shown that the difference between the two portions in the living subject amounted to an average of nearly 10 mm. Hence, in carrying out the principle of restoring the urethra by section to its normal calibre, the risk of such deep incisions must be kept in view and not lightly resorted to, especially as on page 491 we have recorded two deaths following urethrotomy in patients whose strictures admitted instruments of the size No. 16 of the French scale.

"Gradual dilatation is in the end considered very unsatisfactory, relapse being the rule, and is only applicable to very recent cases." Rupture is strongly advised by the consecutive use of conical sounds of increasing size; six in number are used, running from No. 11 at the point of the smallest to 30 of the French scale in the shaft of the largest, beyond which he rarely has occasion to go. Richardson's divulsor is also decidedly commended as more useful than Holt's. It is interesting to note that of this operation, now falling into desuetude by reason of its frequent relapses as well as by its greater mortality¹ over internal incision, he says:—

"The operation of rupture with either of these instruments may be said to be absolutely free from danger, unless there is advanced renal disease. It is never followed by serious hemorrhage, and what bleeding there is usually promptly ceases spontaneously. I have never known it to give rise to any untoward symptoms. . . . I do not hesitate to give it my unqualified approval. Internal incision is, however, preferable when the disease is seated at or near the meatus and in the spongy portion anterior to the curve, and when the new deposit is thick and dense."

Of the latter operation, he says on the next page: "I have performed the operation too frequently not to be convinced of its superiority, as to enduring results, over all other plans," and sums up further on, without statistical proof, however, as follows: "If all resisting bands have been thoroughly divided, and a bougie of the size of the natural calibre of the urethra slips easily, by its own weight, into the bladder, without meeting the slightest impediment to its insertion or withdrawal, after the wound has healed. I have every reason to believe that recontraction need not be feared, and that the subsequent methodical use of the steel bougie may be dispensed with, except at long intervals, as a matter of precaution."

A new urethrotome by the editor is brought favourably to notice for division of strictures of moderate calibre. Trelât's is advised for tight stricture, but no mention is made of Maisonneuve's urethrotome, which is the one in common use both here and abroad. The credit of the tunelled sound is given to Gouley.

This is also the dictum of Geo. A. Otis in the second volume of the *Surgical History of the War of the Rebellion*, who shows, moreover, that the idea of the tunelled instrument originated with Desault.

Want of space compels us to pass over the remaining chapters, but, in concluding, it must be said, that notwithstanding the peculiarities that have just been noticed, the present work of Prof. Gross must be held in great esteem and value by the practitioner, not only for the richness of its compilations, but also for its many other and varied excellences. It suffers, however, it must be confessed, to a moderate extent by the necessary comparison it sustains with the more practical and logically arranged volumes of Thompson and of Van Buren and Keyes on similar subjects.

R. F. W.

¹ Gant on Diseases of the Bladder, 1876, states, p. 272, that many deaths have, I believe, occurred. Mr. Teevan says, fifteen in number of this operation which have not been included in the reports of cases hitherto published.

ART. XXXII.—*De l'Exstrophie de la Vessie Envisagée spécialement au point de vue du Traitement Chirurgical.* Thèse pour le Doctorat en Médecine, présentée et soutenue par RONOLFO VALDEVIESO, Docteur en Médecine des Facultés de Pensylvanie et de Paris, etc. etc. Paris, 1876.

Exstrophy of the Bladder, considered specially with regard to Surgical Treatment. Thesis for the Degree of Doctor of Medicine, presented and defended by RONOLFO VALDEVIESO, Doctor of Medicine of Pennsylvania and Paris, etc. 8vo. pp. 76. With four lithographic plates. Paris, 1876.

PERHAPS nothing shows to greater advantage the progress of modern surgery than the operations devised and executed by bold and thinking men for the radical cure or the relief of vesical exstrophy. The wretchedly pitiable condition of the subject of this sort of infirmity had for centuries appealed to the sympathies of the learned and the skilful in the medical profession, and yet, until a very recent time, aid was withheld from the apparent thanklessness of the task.

Teratology, however, seems not only to have pointed to a correct understanding of so remarkable a deviation from the normal as extroversion, but it also, doubtless, suggested the earliest surgical operation ever practised, and which had for its object the radical cure of exstrophy through the establishment of what may be regarded as a higher grade of deformity, namely, that abnormal state in which "the ureters have been found entering the rectum, and discharging the renal secretion entirely by that channel." Failure in this direction forced the operator to be content with procuring relief for his client instead of continuing fruitless efforts towards reconstruction; so that nowadays the surgeon, with more modest aspirations, has at his command a guiding principle which is hardly clouded by the varying circumstances of degree, age, or sex.

It is also observable that the surgical mind is prone to grapple with the difficult, and taxes its energies to the utmost to reach the thule of its aspirations; and success adds vigour to the effort, and paves the way to future progress. So it has always been in our profession; therefore we may not wonder at the increasing desire of surgeons to treat of the exstrophie error of nature, and to make accessions to the number of cases in which treatment has brought about a favourable result. The brochure of Dr. Valdevieso is to be noticed as an evidence of the former. With an excellent knowledge of his subject, of which his first impressions were formed in this country, the author opens his Introduction with the words of Nélaton in his *Surgical Pathology*: "The treatment of exstrophy of the bladder is essentially palliative;" but only to contrast the state of surgery in France before 1857 with its condition in our own time, when the same cannot be said, for "surgeons have striven to afford permanent relief in this painful infirmity."

Then follow general considerations upon exstrophy of the bladder; and in the matter of etiology the author adopts the views of Mr. Herrgott, who expresses his "belief that exstrophy of the bladder results from the 'non-reunion, of the pubic bones, and, consequently, from the separation of the abdominal muscles.'" This opinion will hardly be shared by anatomists, who would rather regard, with Isidore G. Saint Hilaire, "the divers complications of extroversion of the bladder as being in some way inherent, and as accompanying it in the majority of cases, but in some as a constancy;" and believe that such anomalies as spina bifida, acephalia, exomphalos, imperforate anus with incomplete forma-

tion of the intestine, together with all ordinary complications of exstrophy, result, more or less conspicuously, from arrest of development.¹ And they will further agree with the same author that in the separation of the lateral halves of the external genital organs and of the abdominal muscles of the two sides, there is a remarkable concordance, which explains perfectly the connections of the sexual organs with the pubis, and is a first proof of the constancy of the general relation between the vices of conformation of the soft parts and the state of development of the osseous system.²

The treatment of exstrophy of the bladder is divided into the palliative and the surgical. The former consists in the employment of all devices by which plaques or bowls of metal, or other substance, are made to replace the absent anterior wall of the bladder; or else in the introduction into the ureters of "sounds," or rather catheters of silver or gum communicating with a reservoir of boiled leather, after the manner of Piplet in 1792. But our author, deterred by the ill success of methods of palliation involving the ureters directly, is of opinion "that palliative treatment ought to be limited solely and simply to the application of a prothetic apparatus."

Under the head of surgical treatment, we find the statement that "this is really the object of the thesis." And accordingly the two routes to be travelled are set forth, "the one radical," described under the title of method of urinary derivation; "and the other," singularly enough, made to occupy a separate niche from those "simply prothetic," "the simply palliative," "the autoplasmic method."

The greater bulk of this portion of the work is occupied with a consideration of the various plans of procedure; of Simon and Lloyd as essayists of a "radical" method; and of Roux, Richard, Poncest, Ayres, Holmes, Wood, and Le Fort, as originals in relation to the autoplasmic. But no mention is made of the simple *glissement* of two lateral flaps, according to the method of Barker of Melbourne, which, however, has more recently been greatly improved upon by Dr. Henry J. Bigelow, whose successful case, first published in the *Boston Medical and Surgical Journal* in January, 1876, was noticed in this Journal in the following April. Dr. Bigelow removed the exposed mucous membrane of the bladder down to the ureters, so that flaps drawn from the sides were applied directly to the raw surface, and united upon the median line as well as transversely above it.

Among the "conclusions" reached by the author are the following: "4. The autoplasmic method should be employed. . . . The plan of Wood is to be preferred. When it is possible, the preputial flap of Professor Le Fort should be united with the abdominal and lateral flaps. 5. M. Le Fort's mode of making the suture is preferable to all those hitherto put in practice."

Such prominence given to the method adopted by M. Le Fort—"Mon Président de Thèse"—as communicated to the author in the single "observation inédite," calls for a moment's attention to the operation itself, which accomplished the surgeon's purpose after five attempts. It consisted, *first*, in preparing and detaching the prepuce and neighbouring skin, turning the flap so formed up against the lower part of the exstrophied bladder, the penis having been passed through a buttonhole made for the purpose; *second*, in turning down a supra-vesical flap, after six weeks, and attaching by metallic sutures its inferior and the superior preputial margins. *Thirdly*, nine months afterwards the ventral flap was re-formed and turned down, but it involved the cicatrix of the former operation. With regard to the prepuce, says M. Le Fort, "instead of

¹ Tératologie, vol. i. p. 384.

² Idem.

refreshing the surface I split it into two laminæ, one vesical and the other external, between which the free abdominal flap was to be insinuated." . . . "For suture I prepared a bit of gum catheter by perforating it and passing metallic threads through the holes." . . . "To fix the flaps "I transfixed the preputial vesical lamina with the wires, traversing the piece of gum catheter, then the abdominal flap, and finally the outer preputial lamina. Then the wires were run through holes in another bit of 'sonde,' placed externally."

In fact, we have the quill suture presented to us; but when the wires had all been secured, "they were kept in place by a little tube of Galli."

Fourthly, a narrow lateral abdominal flap was raised immediately, and made adherent to the left margin of the preputial flap; and *fifthly* and finally, after a delay of four months "I repeated exactly on the right side the operation I had done on the left," and "I accomplished the task I had set myself."

M. Valdevieso closes his remarks about this operation by saying that "we cannot be too much encouraged by the excellent result obtained in this case to imitate the course of M. Le Fort. But," he naively adds, "as we do not always meet with a prepucæ suitable for such an operation, we fall back, in its absence, upon the method of Wood."

We would here close our review of Dr. Valdevieso's thesis, did we not feel compelled to notice the slighting reference by its author, formerly hospital interne in Philadelphia, and member of the Pathological Society of that city, to the "*Procédé de Panceoust*," which we reproduce: "The plan of procedure of Panceoust would not, of itself, be of much importance, were it not applicable in the many cases, as we are aware, in which the abdominal paries is thinned out above the exstrophied bladder." Professor Panceoust, let it be remembered, conceived and executed an operation appropriate in the case offered him, and happy in its result; and to him belongs the honour of having, in 1858, performed the first successful plastic operation for vesical exstrophy. C. J.

ART. XXXIII.—*Vital Motion as a Mode of Physical Motion*. By CHARLES BLAND RADCLIFFE, Doctor of Medicine, Fellow of the Royal College of Physicians of London, etc. etc. 8vo. pp. vi., 252. London: Macmillan & Co., 1876.

MORE than twenty-five years ago, as Dr. Radcliffe tells us, his confidence in the commonly held ideas concerning vital motion was disturbed by some facts coming under his observation. His reflections were first brought before the profession in an essay on the "*Philosophy of Vital Motion*," in 1851; afterwards, more systematically, in the "*Gulstonian Lectures*" for 1860, published in 1861. In 1864 came out his "*Lectures on Certain Diseases of the Nervous System*." This book was reviewed by us in this Journal in the following year.¹ As our author remarks, while many shortcomings in these earlier works (and in one other book, "*Dynamics of Nerve and Muscle*," 1871) are avoided in the treatise now before us, yet the *thesis*, and all essential particulars of the argument are still the same.

The historical sketch now given by him of the progress of discovery and opinion in regard to animal electricity, corresponds very nearly with that prefacing the "*Lectures*" of 1864. The principal additional point is, that the original opinion of Galvani, as to museular fibres being in a condition of *charge*,

¹ American Journal of the Medical Sciences, July, 1865, p. 121.

like that of the Leyden jar, when at rest, and of *discharge* in their contraction, is now referred to, as having in part anticipated Dr. Radcliffe's conclusions. Du Bois-Reymond's view differs from this, in believing that *currents* of electricity circulate, in closed circuits, around the "peripolar molecules" of which muscular fibres consist. Sir Charles Bell, Dr. West of Alford, Dugés of Montpellier, Matteucci, Engel of Vienna, and Stannius of Rostock, are credited with opinions approaching more or less nearly to those set forth in our author's present work.

After the historical prologue, the main argument is taken up in two divisions: "Vital motion" being regarded first "physiologically," and then "pathologically." Eight chapters in the first division consider the "electro-physics" of vital motion; of simple muscular movement and simple nervous action; of cardiac and other forms of rhythmical vital motion; of rigor mortis; the work of the blood and of nervous influence in vital motion; and objections to the view advocated of muscular motion.

In the second division, four chapters are occupied with vital motion, as exhibited, respectively, in epilepsy and other convulsive disorders; in tetanus and other spasmodic disorders; in tremor; and in neuralgia. An "epilogue" then gives, in a few pages, a summary of the whole work.

Chapter I. of the physiological division enters into a very interesting examination of the electrical condition of living protoplasm compared with that of inorganic bodies. Using for his purpose Thomson's new quadrant-electrometer, the materials employed in a number of observations were, an infusion of hay containing amœbæ, pus, mucus, distilled water, fresh-water sponge, myxomycetes, and sculptor's clay. The results obtained are thus described (pp. 34, 35):—

"The fluids containing protoplasm are all along in precisely the same case as the distilled water. When the examination is made with the electrode belonging to the insulated pair of quadrants only, it is seen that each of these substances, at the same time, is to the same degree positive in relation to the zero of the earth, and that in all of them the potential is subject to precisely the same fluctuations. When, on the other hand, the examination is made with the two electrodes together (and when consequently the insulation is not preserved as it was in the last case), the constant result at all times is seen to be a settling down of all signs of potential to the zero of the earth—a result which could not happen if there were in the object any inherent differences of potential akin to those which are met with in muscle and nerve." "All that is necessary is to take the facts as so many reasons for believing that there is one and the same electrical condition in living protoplasmic substances and in lifeless bodies generally."

This conclusion would certainly appear to be much in the way of Dr. Radcliffe's fundamental proposition, that all "vital motion" is to be resolved into physical motion, electricity being the "mode" in which physical motion is presented to instrumental analysis. But our author's ingenuity (if he will pardon the term) is quite equal to this difficulty. He makes use of Sir William Thomson's statement that the surface of the earth below, and the "thin, vacuum-like medium which forms the outskirts of the atmosphere above," are, with the mass of the atmosphere between them, in opposite states of *charge*; the earth being negative, and the outermost atmospheric layer positive. Investigation, moreover, shows "fluctuations and oscillations in atmospheric potential," which are important in the same connection. Here our author finds the key to the electro-physics of simple protoplasmic vital movement. *Expansion* is consequent upon electrical *charge* and molecular repulsion. All bodies are not thus equally expanded; aeriform substances most, then fluids, last solids. Among the parts of bodies not homogeneous in condition, there will be differences.

"In the case of the amœbæ and amœboid bodies, it may be in the hyaline portions, and not in the portions which have become more or less granular, both of which portions are distributed irregularly, that the apparently irregular expansions and shrinkings are manifested."

We cannot avoid recalling here the well-known fact that many movements of amœbæ are directly related to particles to which they are *adapted*, in a manner which is purposive, like other animal movements, which are said, in ordinary language, to occur in response to the *stimulation* of contact. Professor Leydy has made the remarkable observation that one species of amœba may be seen actually to surround and include a nutritive particle, by the union and *fusion* of its pseudopodic extensions. Here, as elsewhere, in the study of contractility in animal tissues, museular and others, we find a need for some term by which to name, if not to describe, the immediate agency by which contraction is instigated; and for that agency the best word so far known is *stimulation*.

Arriving, in his second chapter, at the consideration of the "electrophysics" of muscle and nerve, Dr. Radcliffe adverts to the existence of ætural currents in these, as well as definite static conditions; they have an electricity of their own; "present at one time, and absent at another, and capable of acting upon the galvanometer as well as upon the electrometer." As intimated already, Dr. Radcliffe believes that the condition of quiescent muscle is statical. But he adds now to his earlier statement of this, the assertion that it is so, as "the electrical condition of an electromotive element in the state of *open circuit*." The contents of the sheath in voluntary muscle, and of the cell membrane in involuntary museular fibre, are compared to simple protoplasm; each fibre being analogous to an ensheathed amœba. The existence of the sheath or cell-membrane makes a difference from the amœba, in the *heterogeneity* of the "sheath" and the "core" of the cell or fibre. These two elements, then, being in opposite states of electrical polarity, positive and negative, we have the conditions for electromotive action completed, when the *oxygen of the blood, or of the air*, is admitted, so as to set up such an action.

"If, then," it is said (p. 65), "the fibres and cells of the quiescent muscle and nerve are electromotive elements in the state of open circuit, of which the negative polar portions are represented by the contents, and the positive by the coats, the inevitable inference is that the electrical indications which are of primary importance, are those which act, not upon the galvanometer, but upon the electrometer—are those, not of the muscle-current and nerve-current, but of free positive and free negative electricity." "The operation of the charge from the constant electromotive action in the quiescent muscle may keep up a constant state of muscular elongation, and, consequent upon this, a constant readiness to enter into the state of contraction; while it is easy to see that this elongation and contraction must operate in a given direction, for the simple reason that the mobile contents of the museular fibres and cells are so confined by the coats as to be only free to move in one direction, their case in this respect being in fact very similar to that of the mercury within the tube of the thermometer."

Similar conditions, so far as electrical states and relations are concerned, are predicated also of nerves; but their structure does not afford a capacity for measurable expansion and contraction like that of muscle. This is evidently very different from the view suggested by the most familiar observations and experiments, that the motor nerves stand to the muscles in the simple relation of *conductors* of that agency which (whether by "charge" or "discharge" or otherwise), causes their contraction or relaxation. Dr. Radcliffe does (unavoidably, perhaps) speak (as on p. 101) of "the direction in which *motor impulses* are transmitted to the muscles."

Eminently clear, however, as the language of Dr. Radcliffe mostly is, being, indeed, a model of scientific precision in statement, those who have read either of his former works must see that his present views have changed in the direction of complication rather than of simplicity. Nor is this promising, as to the final result of his investigations, in the direction in which he has so far advanced. The great laws of nature are gloriously simple. Complication in the appearance of phenomena belongs to our ignorance. When the paths of a labyrinth are growing more and more involved, we may apprehend that we must be seeking an outlet in the wrong direction.

It would be, however, an injustice to so tersely written a book, to attempt to convey its substance within the limits of a brief notice. Many important truths are expressed in connection with the pathological part of his subject; truths which are more generally accepted now than when our author first wrote upon them. He is no longer in the advance, in urging, for example, that convulsion does not coincide with active febrile excitement, or with an over-active circulation in the brain; and that spasm and tremor generally attend rather a diminution than an excess of blood-supply and nervous energy. But we do not feel convinced that these facts, nor those brought forward concerning the "physics" of *rigor mortis*, suffice to establish the conclusion derived by him, in regard to *normal, healthy* muscular contraction, as being *inversely* proportionate to the supply to the muscles of arterial blood. His analysis of the cardiac rhythm as an illustration of this, appears to us but a series of unproven *suppositions*. The whole work is an admirable example of special pleading. It is well worth reading, if only for the sake of showing how, in the present state of physiological knowledge (or ignorance) of the subject of muscular action, it is possible to defend, by cogent arguments, either of the most opposite hypotheses. Especially do we see, with some surprise, throughout the book, a depreciation, at least by comparative neglect, of the importance of that view of the physical forces, both inorganic and organic or "vital," which sees in their *transmutation*, as *correlated modes of motion*, the nearest approach to a solution, yet possible, of many problems in the living body. When we know that the oxidation of carbon, hydrogen, and nitrogen, in or out of the body, will generate force, which is capable, according to its attendant conditions, of being transmuted into heat, electricity, mechanical motion, or *vital, formative* force, and that a quantitative measurement of some, at least, of these transmutations is possible, we must feel great difficulty in believing that there is not a positive relation between this generation of force and the *active* contraction of muscular organs, which does their work. Also, when we know that the consumption of material (whence force comes) accompanies, not the *expansion* or relaxation of muscular fibres, but their *contraction*, all of Dr. Radcliffe's elaborate arguments fail to convince us that the common opinion is entirely wrong, and that "the work of the blood in vital motion" consists in keeping the muscles in a relaxed or stretched condition; or (as expressed upon the final page of our author's "epilogue") that "the actual agency by which the work of the nervous system and of the blood in vital motion is carried out, is not a vital property of irritability, but electricity, or rather, electricity in conjunction with elasticity."

If we are wrong in thus considering that the essential propositions, to expound and establish which this book was written, are *not proven*, this error is against our inclination. We have much sympathy with the purpose of the inquiry, and admiration for the manner in which it has been conducted, and in which its results are set forth. Dr. Radcliffe has already undergone more than one alteration of opinion in connection with his favorite subject. Let us hope that

such indefatigable perseverance, with so high an order of ability, may yet finally meet the reward of success, in solving a problem, which is at once one of the most difficult and one of the most important in physiological science. H.

ART. XXXIV.—*A Treatise on the Theory and Practice of Medicine.* By JOHN SYER BRISTOWE, M.D. Lond., F.R.C.P., Physician to St. Thomas's Hospital, etc. Edited, with notes, by JAMES H. HUTCHINSON, M.D., one of the Attending Physicians to the Pennsylvania Hospital, etc. 8vo. pp. xxxii., 1089. Philadelphia: Henry C. Lea, 1876.

THE professional reputation of Dr. Bristowe, and his experience as a teacher and examiner, led us to expect in this work a full, clear, accurate, and concise presentation of the present condition of the science and art of medicine; and we have not been disappointed. It is a difficult task for any one man to prepare such a work, even if he has unlimited space for discussion; but it is much more difficult to prepare it with the special aim of assisting "the junior members of the profession and students in medicine;" to present all that is essential to a full and clear understanding of each subject, and at the same time to avoid burdening descriptions and discussions with details, which, however interesting and important in themselves, are less so to the novice in medical study than to the scientific investigator and physician. But duly to divide the essential from the non-essential and the adventitious, demands a thorough and judicial knowledge of the subject as a whole and in its several parts, a combination of literary, scientific, and practical experience and skill which are rarely associated in the same person. We greatly err if these conditions are not well fulfilled by the author of the work before us. He seems to us to have seized with remarkable discrimination upon the points which are essential to the several diseases he describes, and devoted himself to bringing them clearly into relief, so that of any picture he presents of a disease the strongest impression left upon the mind is its distinctness. A similar remark is quite as true of the portions of the work devoted to treatment, in which no long array of various medicines with minute directions for their combination and application are furnished to the reader, who is assumed to have derived this knowledge from more appropriate sources, or to be competent to draw it from his own experience. In both of these respects this work reminds us of the admirable treatise of Niemeyer, although in both the English work is much fuller of detail than the German.

The first part of the work treats of general pathology, including etiology, morbid growth, degeneration, mechanical derangement, and the special processes, terminations, and modes of treatment of disease, and is remarkable for the large amount of condensed material it contains. Part second, which includes nearly nine-tenths of the whole, comprises almost all the diseases which belong to medicine as distinguished from surgery. To attain this degree of comprehensiveness within a limited space, made it necessary for the author to state his conclusions rather than the grounds for them, and to discard almost all discussion of controverted points. Such a method, which would hardly be allowable in a writer who had still his position to establish, may very well be accepted in the present case, as the judgment of one who speaks with authority. Nevertheless, we miss certain statements which seems to be called for by the

present state of medical science and opinion, as, for example, that which regards pulmonary phthisis as being most commonly a result of inflammatory consolidation. So far as this book informs us, we should be ignorant of any form of pulmonary phthisis in which fatally destructive processes occur independently of tubercles. As an example of the opposite kind, we may cite the subject of malaria, which is discussed in little more than a couple of pages, and yet without omitting any essential statement. We note the emphatic contradiction given to the idea that epidemic cholera can originate in any association whatever of natural causes except those which have always existed at its original source in India, and that all other alleged causes merely act as favouring conditions for its development. In the American edition, the editor has very properly corrected the statement that "The essential cause of yellow fever is a specific contagium of extreme virulence, which is given off by the breath," etc., by declaring the well-established truth that no case is on record in which a person, having the disease in a previously healthy quarter, has become the starting-point of a local epidemic. A similar error is committed in regard to "Cerebo-spinal fever," of which it is said that "there can be little doubt that it is contagious, it giving clear indication of its spread from the sick to the healthy." On the contrary, the indications are so obscure that no writer concerning this disease, who has personally observed it, alleges that it is in its nature contagious. Nearly all deny that it is so; and, for our own part, having studied it in hospitals and in private practice, we feel bound to declare that it has never exhibited to us a contagious character.

The absence of a long enumeration of remedies for diseases has already been noted as characteristic of this work, and it at once inspires respect for the author's judgment to observe that in the treatment of pneumonia and of typhoid fever, but little mention is made of veratrum, digitalis, aconite, and other arterial sedatives, the farrago of pseudo-science which has been dragged into the treatment of these and other febrile affections of late years. As the author remarks, "a direct cure, at all events a direct cure by means of drugs, is in the great majority of cases totally impossible." Not that he ignores either the old or the new, if only it has just claims to notice. Thus he refers to the cold-water treatment of febrile affections, indicating its effects without approving its use. Like some other agents, it has several times been in vogue, only to be discarded when the accidents it occasioned or the trouble it gave dissuaded from its use.

The author states that he has only occasionally devoted a special paragraph to the differential diagnosis of diseases, and while admitting that he has been driven to this course by the exigencies of space, he does not on the whole regret it, "for the distinguishing of one disease from another disease should depend, not on the simple recognition of a few leading characters, . . . but on a *bona fide* and thorough acquaintance with the collective phenomena of disease." Such a reason appears to us inadequate, however true in fact, since the characteristic distinctive phenomena of every disease are easily summarized, and, when placed side by side with those of diseases with which it is liable to be confounded, present it to the mind's eye as a separate entity, which is then more readily preserved in the memory, along with its special nature, tendencies, and methods of cure. Moreover, a clear diagnosis lies at the very foundation of scientific accuracy in clinical medicine. And, finally, as a mere matter of convenience and saving of labour and time, its value is inestimable.

On the whole we cannot but recommend Dr. Bristowe's work as a very full and reliable treatise on the theory and practice of medicine, admirably adapted

to the wants of the student and practitioner, by its equally precise and complete descriptions of diseases, and by its judicious views of their treatment.

The additions of the American editor are always appropriate and instructive, and supply deficiencies in the original text. We quite agree with the judgment expressed in his Preface, when he says that "he knows of no other work in which the author has been equally successful in bringing within the compass of a single volume the description of so large a number of diseases, . . . and in doing this in a manner as advantageous to the student."

A. S.

ART. XXXV.—*The proper status of the Insane and Feeble Minded.* A paper read before the Medico-Legal Society of New York, February 25, 1875. By JOHN ORDRONAU, LL.D., *State Commissioner in Lunacy.* 8vo. pp. 48. New York.

IN this very able paper, the subject is considered chiefly from the legal standpoint. The author states at the outset that our whole procedure in cases of lunacy is tinged with palpable contradictions, and declares that "it never has been, and never can be explained on rational principles why, if the State be the guardian in equity of all lunatics, and it has the power of issuing commissions under civil proceedings which shall give it the custody of such persons and the right to detain them in asylums; it cannot rationally be explained why it has parted with that same power, when a person accused of crime asks for its protection against the technical jurisdiction of a common law court." This is the key-note of his examination of the doctrine and practice of the criminal law of insanity; and the remedy he would adopt for the defects of the present system is to extend equity jurisdiction over lunatics in all cases, criminal as well as civil. Equity, he says, is only natural justice. "Hence every honest appeal in lunacy, by whomsoever made, should be listened to as a petition in equity; and in criminal trials, in particular, where every presumption favours innocence, and every doubt cures to the benefit of the defendant, the plea of lunacy should be heard and settled before proceeding to try a party whom the State has solemnly declared to be incapable at law of committing a crime."

In support of his reform he shows that our administration of the criminal law in cases of insanity is in conflict with well-settled principles of law, as well as the facts of science, and is made the means of great injustice. Under the change he proposes, he contends that no practical inconvenience or harm would arise, and the rights of all would be amply secured. His points, if we may be allowed to judge, are well taken and ably sustained, albeit with a degree of subtilty in the reasoning sometimes, which reminds us rather of the ingenious advocate, than the scientific inquirer. As they are chiefly of a legal character, they would be imperfectly understood by the medical reader, and therefore we shall advert to one or two of them only.

In addition to the objections which lie against a jury trial in ordinary cases, as a means of eliciting the truth and doing justice, its processes are marked by a mischievous absurdity when the issue depends on a question of science or any very special knowledge. The jury is supposed to be incompetent to understand the full significance of the facts that appear in evidence, and so the law allows experts to be called in order to enlighten them in regard to the matter in hand. This arrangement, wise as it is, undoubtedly, may fail to accomplish its proper

purpose, because, whether the experts agree or disagree, the jury may disregard them altogether, and render a verdict according to their own foregone conclusions. If honestly disposed to be guided by the evidence of experts, then this jury, who are supposed to be incompetent to decide upon the facts, are obliged, in case the experts disagree, to sit in judgment on their conflicting opinions. And yet all this is approved by lawyers who are shocked by the idea of juries presuming to judge of the law as well as the facts of the case; as if juries were not fully as competent to decide upon the meaning and purpose of the law, as they are on the bearing and weight of scientific testimony. If they are competent for the latter duty, why call experts at all, the Doctor pertinently asks. He prefers that the question of insanity, when pleaded in defence of crime, should be tried by a commission of experts, and he would also embrace within the scope of this provision, cases in which the presence of insanity at the time of trial is alleged. Many years ago the Legislature of New York enacted that "no act done by a person in a state of insanity can be punished as an offence; and no insane person can be tried, sentenced to any punishment, or punished for any crime or offence while he continues in that state." For reasons not very obvious this provision has been seldom resorted to, and men are tried in that State, every week in the year, where the defence is solely insanity, past or present. It is not improbable that lawyers have been governed by the idea that proof of insanity existing at the moment of trial might lead to indefinite confinement, while proof of its existence at some previous period, when the criminal act was committed, is not incompatible with subsequent recovery; a fact which, in one way or another, might procure the discharge of the prisoner. In fact, whatever may be his mental condition when arraigned, the plea is not insanity, generally, but insanity at a certain previous period. This distinction, Dr. Ordrounaux does not always bear in mind. However absurd it may be to require a person legally incompetent, perhaps, to make a will or a contract, to undertake so important an act as that of pleading to an indictment of the gravest character, the incompetency and the absurdity disappear the moment he is restored.

Whether, in all cases, the special issue should be tried in connection with the general issue, or relegated to a commission of experts, is a question where much may be said on both sides. Bad as the former course is, the other is not free from serious objections. The radical defect of the jury trial is that it is without any competent authority to decide between conflicting witnesses; but is trial by commission any better in this respect? Who is to decide when commissioners disagree? If it is to be the majority, we need only remind the reader that the truth is not always on the side of the majority, whether of jurors or commissioners. Of course, a commission would have a wider scope of inquiry, and thereby, other things being equal, be more likely to reach a true conclusion. Whether it would always be the means of securing a higher degree of skill and true discernment, there is much reason to doubt. Are judges and governors so well informed as to the proper qualifications of experts, so free from petty prejudices and partialities, that they would always select for the duty only men of acknowledged eminence and worth? Considering the heterogeneous crowd that now fill the ranks of medical practitioners—homœopaths, half-educated regulars, eclectics, female doctors, etc., not one of whom, probably, is without some friend or patron of high degree, we cannot shut out some grave apprehensions on this score. Indeed there are men whose professional standing and social position would be, in the eyes of the world at large, an ample warrant for their appointment, who are totally unfitted for the duty

by their peculiar views or lack of special knowledge. We think Dr. Ordronaux can see within the line of his mental vision more than one of this description. Would he subject a friendless prisoner to a risk which he would deplore in the case of a friend of his own? Would he wish to consign any one to the official inquisition of a man, however distinguished in his profession, who believes that no form of insanity short of raving mania, and hardly that, should exempt the patient from condign punishment for any criminal act he may commit? It is a vulgar notion that the disagreement of experts proceeds from ignorance or dishonesty, and it is not confined to the vulgar, for it is much entertained by those who ought to know better. How people of any mental culture can expect from experts unanimity of opinion on all occasions, passes comprehension, for they cannot help seeing, every day, scientific men of the highest eminence expressing conflicting views in books, conversation, and the discussions of societies. If geologists, chemists, physiologists, engineers, mechanics, may differ from one another, on such occasions, each in their respective fields of inquiry, why may not doctors differ on the witness-stand? Surely Dr. Ordronaux cannot suppose that three or four men investigating a case, in the character of commissioners, would be any more likely to agree in their conclusions.

So far as the method of proceeding by a commission would give better opportunities for examining the prisoner, it certainly would have an advantage over the usual method; and if it were made peremptory, it would be an act of justice and humanity towards such as are unable to avail themselves of the aid of experts in any other way. Nor can it be denied that when resorted to in obscure cases, as supplementary to a jury trial, it might be the means of preventing the harm of an unjust verdict. Beyond these particulars, we are not sure that the trial by commission has any advantage over a trial by jury. By means of the latter, on the other hand, we obtain every possible construction of the facts in evidence, their significance is regarded from every point of view, the latest advances in knowledge bearing on the case, are brought to light, and the defendant feels that everything has been done for him which the science and skill of the times could furnish. True, all this may be regarded as of little or no account, by the jury, and a verdict given in the face of it. But this defect of the trial by jury we have it in our power to remedy in some measure, by placing in the panel men of a higher grade of culture and character than that we too often witness. We are not prepared to indicate exactly the legislation necessary to secure this result, but it would seem to require no great ingenuity to devise it. Still we would not deny that a large class of cases—those especially in which the disease is supposed to be present at the time of trial—might well be referred to a commission, to the great saving of time and expense, provided that its verdict, if unfavorable to the defendant, should be no bar to his pleading the special as well as the general issue, in the subsequent trial.

In treating specially of the criminal responsibility of the insane, Dr. Ordronaux fully embraces the views of those who are best acquainted with the nature of insanity, and with the ways, manners and habits of the insane. Nothing can be stronger than his protest against the traditional doctrines of the common law on this subject. "But for the traditional difficulty which has always beset common law courts of determining how the violated dignity and sovereignty of the State can be adequately vindicated in questions of alleged crime, without resorting to penalties *in extremis*, we should long since have been delivered from the dread of the plea of insanity as an answer to indictments. In all other directions, save this, our common law jurisprudence has been willing to walk in the vanguard of social enlightenment, and to follow the lead of such emi-

nent jurists as Lord Mansfield, Sir William Scott, and Sir John Nicholl. But here we are creeping in the same swaddling clothes which Lord Coke, as our legal wet nurse, put around us in *Beverly's case*." A statement, this, exactly true in fact, and most fitly expressed.

Of course, Dr. Ordonaux is dissatisfied with the rules of law usually laid down by the courts in determining whether the alleged insanity of the prisoner is such as to exempt him from punishment, and substitutes some of his own, viz. :—

"*First*. Whether the defendant, at the time of the alleged crime, knew the nature and consequences of the act he was committing?

"*Second*. Whether, if he did so know them, he had a felonious intent in committing the act?

"*Third*. Whether, knowing the nature and consequences of the act, he had the power to choose between doing or not doing it?"

Another requirement is that the mental impairment alleged must be the result of disease, not of intoxication or anger.

These tests, we are obliged to say, like those which he condemns, are not founded in an exact knowledge of the movements of the insane mind. All these questions might be answered affirmatively without implying responsibility. Many of the inmates of our hospitals might say, after committing an assault by word or blow, on a fellow-patient, "I knew that I should hurt or annoy him, and as a consequence, be shut up in my room, or have restraint put on my limbs. He twitchea a newspaper from me, or called me vile names, and I meant to punish him for it. I would have shot him dead if I had had a pistol. I could have refrained from doing as I did, but I didn't choose to. It served him right, and I am glad I did it." Here are all the elements of crime as defined by lawyers, and yet we know that insanity—the mental condition which made him unfit to remain a member of society—was at the bottom of it all. Have we not heard a patient say, when asked if he were irresistibly impelled to do the mischief which seemed to be his principal occupation, "By no means. I might refrain if I pleased, but it gives me an indescribable pleasure to do as I do." And yet that man, when not insane, was a good citizen, neighbour, and husband, respected and trusted by all around him. The fault of Dr. Ordonaux's tests is precisely that which vitiates those of the common law. He endeavours by their means to discover what is beyond the reach of mortals, viz., how far and in what manner, precisely, insanity impairs the power and the disposition to pursue the right and avoid the wrong. We regret that he did not give the sanction of his experience and his office to the rule recently laid down by the Supreme Judicial Court of New Hampshire, whereby the jury are instructed that their duty is to ascertain whether or not the defendant is insane, and if they find him so, whether the act for which he is on trial was the offspring of such insanity; in other words, whether he would have committed the act had he not been insane. This rule recognizes the limitations of our own discernment, and confines the jury to their only rightful province, the determination of facts.

We are glad this lecture has been published, and we wish it would be read by every lawyer in the land, for it is not often they see this subject so ably and intelligently presented from the legal point of view.

I. R.

ART. XXXVI.—*Cyclopædia of the Practice of Medicine*.—Edited by Dr. H. VON ZIEMSSSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. XI, Diseases of the Peripheral Cerebro-spinal Nerves. By Prof. WILHELM HEINRICH ERB, of Heidelberg, Baden. Translated by Mr. HENRY POWER, of London, England. 8vo. pp. xiii., 623.

Vol. VI. Diseases of the Circulatory System; together with the Chapters on Whooping-cough, Diseases of the Lips and Cavity of the Mouth, and Diseases of the Soft Palate. By Prof. ROSENSTEIN, of Leyden; Prof. SCHROETTER, of Vienna; Prof. LEBERT, of Vevay; Prof. QUINCKE, of Berne; Dr. BAUER, of Munich; Dr. STERTEX, of Stettin; Prof. VOGEL, of Dorpat; and Prof. WAGNER, of Leipzig. Translated by GEORGE W. BALFOUR, M.D., of Edinburgh; EDWARD D. GEOGHEGAN, M.D., of London; THOMAS DWIGHT, M.D., of Boston; J. HAVEN EMERSON, M.D., and GEORGE C. WHEELLOCK, M.D., of New York; and J. SOLIS COHEN, M.D., of Philadelphia. ALBERT H. BUCK, M.D., New York, Editor of American Edition. New York: William Wood & Company, 1876.

THE student will find in the eleventh volume of Ziemssen's *Cyclopædia*, in addition to the various forms of neuralgia, several diseases of the peripheral nerves treated of in detail, which are, in consequence of the necessity for economizing space, passed over with little or no notice in the ordinary works on the Practice of Medicine. They are, however, very numerous, including a great variety of local spasms, paralyses and contractions, and are often the source of much distress to the sufferer and of perplexity to his physician. In spite of the careful study of which they have of recent years been the subject, but little is definitely known of their pathology. Indeed, although the symptoms point unmistakably in many cases to the existence of a lesion, it has as yet escaped discovery by all the methods of investigation at our command. It has hence been common to speak of these affections as "Functional Neuroses."

Dr. Erb, judging from the short bibliographical sketch at the beginning of the volume, seems an eminently fit person to be intrusted with the task Dr. Ziemssen has confided to him. After graduating at Munich he served for six months as Prof. Buhl's assistant; then going to Heidelberg he held a similar relation to Friedreich. Not satisfied with the experience gained in this way he spent six months in Berlin in order to further perfect himself in scientific matters. Accidental circumstances induced him upon his return to Heidelberg to make a thorough study of electro-therapy, and in this way he was naturally led to give particular attention to diseases of the nervous system. During the last two years these two specialties have formed, we are told, the chief subject of his studies, and of his lectures since his appointment to lecture on electro-therapy at the University. An examination of the volume shows that the author possesses a thorough familiarity with the literature of the subjects upon which he writes. We notice with pleasure that his reading has embraced the works of American as well as of European authors; the papers of Dr. Weir Mitchell being frequently referred to in such terms as to show his high opinion of their value.

We think it will generally be admitted that the rank and file of our profession have very confused notions on the subject of electro-therapy, knowing in very few instances what form of electricity to employ, or how and when to use it. We do not find, however, that Dr. Erb is able to lay down very definite rules for our guidance.

"The special indications for the employment of this remedy (electricity) cannot, however," he says, "as yet be given with precision, since most of the facts have been discovered empirically, and still require much corroboration. As a matter of course," he goes on to say, "electricity will not cure all forms of neuralgia; it cannot even be accounted a sure palliative in all neuralgias, but is surpassed in this by the narcotics. This is particularly true of neuralgiæ which are due to gross anatomical changes, and of those caused by anæmia and the different forms of poisoning so long as these causes continue to act." Electricity, especially the galvanic current, will, however, often be found to yield good results in the so-called idiopathic neuralgiæ, in most of those which are due to a rheumatic or neuritic process, and which have become habitual; and, finally, in a certain proportion of the excentric neuralgiæ.

The author is evidently of the opinion that the frequency and importance of the "points douloureux" in neuralgia have been very much exaggerated, especially by the distinguished physician by whom they were first accurately described; in this view agreeing with Romberg, Trousseau, and Anstie. Eulenberg, indeed, was able to find them in only one-half the cases that came under his care.

In regard to a point of much interest to physiologists we find the author expressing himself as follows:—

"This is not, indeed, the place to enter fully into the difficult question of the existence of trophic nerves, yet there is no reason why we should not state that our opinion is entirely in favour of their existence; and that a whole series of the above-mentioned trophic disturbances are only explicable on the supposition that the nerves exert a direct influence upon the nutrition of the tissue; as, for example, the changes in the colour and growth of the hair, the hyperplasia of the epithelium, the deposit of pigment, the hypertrophy and in part the atrophy of the tissues, and perhaps also a part of the inflammatory disturbances in the skin, erysipelas, pemphigus, herpes, etc."

It is not always an easy matter to determine the seat of neuralgia from the character and situation of the pain, and the author, while giving Benedict's rules for the differentiation of peripheral from central neuralgia, adds that "it is probable enough they do not hold in all cases."

"In true peripheral neuralgia," Benedict says, "the pain is of a more continuous character (during the paroxysms), follows the course of certain nerves, and is never seated in the bones; on the other hand, in central (excentric) neuralgia the pain is of a wandering character, does not follow the course of any definite nerve, is particularly liable to affect the bones, and has a well-marked, sudden, lancinating character." Lastly, he adds, "a third group may be distinguished in which the pain presents the peripheral (continuous fixed) character, but is localized in the bones, and thus indicates that the seat of the affection is in the nerve roots, in the cavity of the skull, or in that of the spinal cord."

In this connection a case, showing the difficulties occasionally attending the diagnosis of the seat of neuralgia, which recently came under the writer's observation, may be briefly referred to here. A negro lad, giving a distinct history of exposure to malaria and suffering from violent facial neuralgia, was admitted last August into the medical wards of the Pennsylvania Hospital. The pain yielded to full doses of sulphate of quinia, and never afterwards reappeared. Under these circumstances, the diagnosis of malarial neuralgia which was made upon his admission seemed to be fully confirmed. He was shortly afterwards discharged; the presence of a slight amount of disease of the apex of the right lung having been, however, fully recognized. With this exception there was no evidence of disease. He was readmitted last November

with general tuberculosis which ended fatally in the course of a few days. At the autopsy, his brain, upon being carefully examined, was found to contain four caseous nodules varying in size from a large pea to a filbert, the smallest nodule being seated on the right side of the pons Varolii—the side upon which the neuralgia was seated—and, therefore, near the origin of the nerve involved.

The volume is, from the fact already noticed that it contains matter not generally included in text-books, one of the most valuable of the series. As in the other volumes, each chapter is preceded by a full bibliography.

The authors of the papers in Vol. VI. are so numerous that it would be impossible, within the limits assigned us, to present our readers with sketches of their lives. Indeed, this kind of introduction, in most instances, is unnecessary, as they are already sufficiently well known to the reading portion of the profession. The gentlemen whom Dr. Buck has called to his assistance in translating the volume have done their work so well that there is very little to remind us that it was originally written in German. Dr. Rosenstein, who is the writer of the general introduction to Diseases of the Heart, and of the chapter on Diseases of the Endocardium, applies the term "diphtheritic" to the form of endocarditis which it is more usual to distinguish as "ulcerative," believing that the malignant nature which characterizes this affection is not to be attributed simply to the ulcerative process, but to the peculiar fundamental disease which induces the ulceration. Besides which, Virchow has called attention to the similarity of the process to that which takes place in diphtheria. We find him recommending in the treatment of this disease, for the purpose of lowering the excited activity of the heart, a remedy which, if it has been used at all in this country with this object, has certainly not obtained much popularity. This is the application of cold to the præcordial region in the shape of poultices or ice-bags. This recommendation he repeats when speaking of the treatment of the more ordinary form of endocarditis. The remedy is also referred to approvingly by some of the other contributors to the volume. Among these we may specially mention Dr. Bauer, who in his article on "Pericarditis," thus alludes to it: "The application of an ice-bag over the heart at the same time (as the administration of digitalis) has been found very advantageous, whether in quieting the tumultuous action of the heart, together with the sensation of palpitation, or allaying the pain which accompanies the disease." The employment of cold, he says, has been proved by others, especially by Friedreich, to be useful, "so that nowadays the moist and warm applications and poultices of former times for the acute stage of the disease are no longer used." Again, Prof. Schroetter speaks most highly of the persistent and faithful use of cold in the treatment of hypertrophy of the heart, believing that this simple remedy is fitted most wonderfully to quiet its over-activity.

In consequence of the great size of Volumes VII. and VIII., the editor has thought it best to incorporate the article on Whooping-cough, as well as the articles on Diseases of the Lips, Cavity of the Mouth, and Soft Palate, into this volume. It might reasonably be objected to this arrangement that it has given most inconvenient proportions to this volume. These articles, so far as we have been able to examine them, seem well written and instructive; but we shall only refer to Dr. Steffen's observations in regard to the use of quinia in whooping-cough. He has found it to diminish very decidedly the duration and severity of the disease, if given in full ante-periodic doses, as much as nine grains having been taken twice daily for eleven days by a child of three years

of age in one of the cases which he reports. Whether this action is to be based upon the still doubtful theory of fungus spores, he, however, leaves undecided.

In conclusion, it only remains for us to say that these volumes fully sustain the high character of the series.

J. H. H.

ART. XXXVII.—*What is the best Treatment in Contracted Pelves?* By ISAAC E. TAYLOR, M.D., President; and Emeritus Professor of Obstetrics and Diseases of Women and Children, in Bellevue Hospital Medical College, etc. etc. Reprinted from the *Transactions of the New York Academy of Medicine* for September, 1875.

PART II. *Is Craniotomy, Cephalotripsy, or Cranioclasm preferable to the Cæsarean Section in Pelves varying from one and a half to two and a half inches?* Read March 2d, 1876. 8vo. pp. 64.

PART 1st is confined to cases in which the pelvis ranges from two and a half to three and three-quarters inches in the antero-posterior diameter. It refers to two varieties of deformity, viz., the *generally contracted pelvis*, when the diameter ranges from three and a quarter to three and three-quarters inches; and the *simple flat pelvis*, varying from two and three-quarters to three and three-quarters.

In the latter, after failure of forceps, *version* should be resorted to. In this variety the long straight forceps are preferred by the author to the long curved ones. In the former, the latter form of instrument is recommended.

Under Part II. the author draws the following conclusions:—

"1. That a mutilated fœtus can be delivered with safety to the mother through a space of one and three-fourths inches antero-posterior, and a two and a half or three inches transverse, by craniotomy, cephalotripsy, or cranioclasm, provided the vault has been destroyed, and the face made to present edgewise, or delivering the head sidewise.

"2. That after cephalotripsy or cranioclasm, if necessary, version early performed, with propulsion from above the pubes afterward, and before the uterine forces are exhausted, is preferable to the first proposition, and I believe more available.

"3. That the cephalotribe or cranioclast cannot be considered sufficiently available as tractors after cephalotripsy, to deliver the patient in extreme contraction, and that other instruments as tractors are necessary to aid the delivery.

"4. That the Cæsarean section should not be performed when the contraction or deformity is as stated above, unless some other complications or circumstances exist or present."

We are not at all prepared to endorse the views of Dr. Taylor, which are also those in many respects of Drs. Barnes, Hicks, and others of England, where the Cæsarean operation has been frightfully unsuccessful, because of its having in most instances been one employed as a last resort, instead of being one of election, and performed at the most favourable time for the woman's recovery. We believe that the views expressed by the late Dr. John S. Parry of this city, in his paper entitled, "The comparative merits of craniotomy and the Cæsarean section in pelves with a conjugate diameter of two and a half inches or less," more closely represent the relative advantages of the two forms of delivery, as applied to the general profession. Take the average skill of the obstetrical operators of the United States, and let it be

tested under the most favourable circumstances in pelves of minimum diameter, by an equal number of operations of both varieties, and we shall find the mortality much less by the Cæsarean operation than is generally credited to it, and quite as great by the other.

On page 34, Dr. Taylor professes to give the results of the Cæsarean operation in England, Germany, France, Belgium, Italy, and America. He gives England 480 operations, and 236 recoveries, or nearly one-half saved. If this was the case, we should find comparatively little of the opposition that prevails against this operation in Great Britain. Where Dr. Taylor procured his information we cannot imagine, for it was not until 1869 that a hundred operations had been reached in Great Britain and Ireland, as the result of which, 84 women perished. Had he fully consulted the *American Journal of Obstetrics*, he would have found for the United States, instead of 12 cases and 4 recoveries, 59 cases with 30 recoveries. We have the most reliable statistics for our own country that have been collected by any recorder, every case being obtained in a way to put the truth of the statements beyond question, many accounts having been rejected because locality, time, and circumstances could not be satisfactorily given. We have also declined all cases, where gastroto-my was performed, after rupture of the uterus, as this operation being always promptly resorted to, has been less fatal than gastro-hysterotomy, and besides has been more frequently done. Thus far, we have the records of 70 operations, the same number that Dr. Parry collected of craniotomy cases; and do not require to go to England to learn the comparative merits of craniotomy and Cæsarean section. It is true that when early resorted to by men of skill, like Drs. Taylor, Hicks, and Barnes, cranioclasm in extremely contracted pelves very often results favourably; but what would happen at the hands of average men? is the question we have to answer; and would they run any greater risk in attempting to save two lives by an early resort to the knife? We believe that the Cæsarean operation will never assume the elective position it should in America, until operators learn fully, how successful an early resort to the knife has been here; and thus cease to be influenced by that fear of it which English want of success has disseminated in Great Britain, and has materially contributed to strengthen and continue. Boldness and perseverance in a few men saved ovariotomy from being held up to the world as an unjustifiable operation. The same care and skill in gastro-hysterotomy would change the views of the profession as to the danger to be apprehended. R. P. H.

ART. XXXVIII.—*Catalogue of the Models of Diseases of the Skin in the Museum of Guy's Hospital.* By C. HILTON FAGGE, M.D., Assistant-Physician to and Lecturer on Pathology at the Hospital; formerly Demonstrator of Cutaneous Diseases. 8vo. pp. xxxii., 269. London: J. & A. Churchill, 1876.

It is unquestionably a sign that our profession is advancing in the right direction when a volume such as the one before us makes its appearance. It belongs to a class of which we see far too few examples in connection with the museums found in every centre of medical education, and indicates a laudable desire to place the resources of such an institution in their most favourable light. In the present instance the work could not have been entrusted to abler hands, for Dr. Fagge is everywhere recognized as an accomplished

dermatologist. We find the models arranged according to an "analytical index," or classification, proposed by the author, which divides cutaneous diseases into five groups: I. Inflammatory (or simply congestive) diseases. II. Non-inflammatory diseases, not having destructive tendencies. III. Non-inflammatory diseases, affecting the tissues of the skin profoundly, and generally destructive in their tendencies. IV. Affections of the appendages of the skin. V. Parasitic diseases. Of the merits or demerits of this classification the present occasion does not permit us to speak at length, but briefly stated, we think too little prominence is given to the anatomical structures involved and to the pathological process. Thus, for example, we find in the first group, eczema divided into acute and chronic, and the two stages of this disease separated, acute eczema being placed in division "A. Protecting against recurrence, or at least non-relapsing (exanthemata)," while chronic eczema is placed in division "B. Not protecting against recurrence, and mostly relapsing." We cannot see that anything is to be gained by separating the stages of diseases, even in the case of an affection so multifiform as eczema.

Concerning the nomenclature employed we are much more in accord with the author. In looking over the names which have been adopted by Dr. Fagge to represent the diseases illustrated by the models, we find them to be most judiciously selected from the many synonyms with which almost every disease has been burdened. With few exceptions they are those used at the present day by teachers of dermatology in all parts of the world.

Of the excellence of the models themselves, the name of the artist, Mr. Joseph Towne, who for a period of forty years has occupied the position of artist and modeller to the hospital, is a sufficient guarantee of superior work. From a personal inspection of the museum some few years ago, we are, moreover, prepared to speak in unqualified terms of praise of these works of art. The collection is a most valuable and extensive one (containing five hundred and thirty-seven models), and embraces numerous examples of almost every disease which permits of representation. Some idea of its wealth may be obtained by glancing at the number of pieces with which the commoner affections are illustrated. Thus, of the syphilodermata there are seventy-three models; of eczema (including lichen), forty-four; of psoriasis, thirty-four; of ichthyosis, fourteen; of pemphigus, eleven; of keloid, sixteen. Among the rarer affections we find twenty-five examples of leprosy; twenty-one of those curious and complex diseases known as scleroderma and morphea; seven of cornu cutaneum; thirteen of xanthoma; and nine of equinia. The museum stands unrivalled in the collection of these rarer diseases.

With each model Dr. Fagge has given a brief description of the lesions, together with such remarks as the case appeared to call for. In many instances, especially with the more obscure diseases, the full histories with apposite remarks are presented. The notes of the author, to be found upon almost every page, add greatly to the value of the volume, and are well entitled to more than passing notice. They show accurate observation, and a thorough knowledge of dermatology. The work everywhere bears distinct marks of careful preparation, and cannot but be highly esteemed, not only by the students of the hospital, but also by the profession at large. It, moreover, makes known a store-house of most valuable material for purposes of study, and well illustrates the solid work that has been done for dermatology in this renowned seat of medical teaching.

L. A. D.

ART. XXXIX.—*The Anatomy of the Head, with six lithographic plates, representing frozen sections of the Head.* By THOMAS DWIGHT, M.D., Professor of Anatomy at the Medical School of Maine, etc. etc. 12mo. Boston, H. O. Houghton & Co., 1876.

Any good work on the regional anatomy either of a part of the body or the whole of it, is a welcome addition to medical literature. Especially so is it when it comes to us in English dress, and consequently can be studied by that very large class of medical students to whom the valuable French and German works are sealed books. Recognizing, as every teacher does, the very great value of the anatomy of relations, and having had the opportunity of preparing sections of the frozen head, Professor Dwight has presented to students and practitioners the work under review. Its fifteen chapters are devoted to the consideration of the bony framework of the head and face, its covering soft parts, and contained important organs, and through all and above all else the relations of the various structures to each other—"histology holding no place," and "many of the smaller details" being "disregarded."

Though, of course, in a bibliographical notice no special review of the work can be made, it may not be out of place to call attention to a few things that have been specially noted in reading the book. Both by words and reference to a drawing, the student's attention is directed to the thinness of the plate separating the mastoid cells from the cranial cavity, and to "how little there is wanting to form a canal directly through the temporal bone."

The old idea of the arachnoid, "that it is a serous membrane forming a closed sac," is declared "utterly false."

The muscular parts of the occipito-frontalis are stated to "have no kind of relation to one another, except that of being inserted into the two ends of the fascia;" and further on the different nerve supply to the two parts is pointed out. Attention might have been called to the fact that the occipito-frontalis is among the few muscles lying outside of the deep fascia.

Extended reference is made to the erectile character of a part, at least, of the nasal mucous membrane and to Professor H. J. Bigelow's investigations.

The buccal nerve is placed among the sensory branches of the fifth.

The hyoid insertion of the genio-hyoglossus, "as a rule," is denied.

The fact of the existence of Fleischmann's bursa is accepted.

The internal lateral ligament of the lower jaw is declared to be double, the short portion being inserted into the inside of the neck of the bone.

The digastric is believed to be the most important muscle concerned in opening the mouth, atmospheric pressure being the chief agent in keeping the mouth closed.

The extirpation of the entire parotid gland is pronounced "an impossibility." We had thought this old *questio vexata* had been definitely and forever settled, and that both anatomists and surgeons had become convinced that the entire gland, when diseased, can be and has been removed.

Our author agrees with Tillaux in the statement that the external carotid artery "does not enter the gland from below, but on the inner side, at a point which is variable."

The transverse facial artery is not mentioned. "The question of the relation of the chorda tympani to taste" is declared "far from settled."

More space has been devoted to the consideration of variations in size of the jugular fossa than would probably have been given by any one else than our

author, who very naturally feels a considerable interest in a subject which he has so ably treated elsewhere. (See *Amer. Journ. Med. Sci.*, October, 1873.)

The statement that "there is no distinct fascia about the face, except the masseteric, and that under the chin," is subsequently corrected by the remark that the "buccinator is covered externally by a fairly defined fascia."

Six lithographic plates, representing the sections of the head, to which we have already referred, are appended to the work, and add no little to its value. We hope that when a new edition is brought out these plates will be declared to represent sections of the frozen head, rather than frozen sections of the head; and still more, that the author, out of regard to his readers' feelings, will use the expression *in front* instead of *on front*, for which he seems to have such a partiality.

P. S. C.

ART. XL.—*Mémoires sur la Galvano-caustique Thermique* par le Docteur A. AMUSSAT fils. 8vo. pp. 125. Paris: Germer Baillière, 1876.

THE literature of galvano-cautery is meagre. With the exception of contributions scattered through the periodicals, the *Thèses* of Duplomb and Blanchet, a very valuable essay by Broca, and an excellent article in the *Nouveau Dictionnaire de Méd. et de Chirurgie*, there are but half a dozen works upon the subject. These are by Middeldorpf, v. Bruns, Boeckel, Voltolini and Byrne; to which is to be added the one under consideration. Of them all, but one, that of Byrne, is in English, and this one simply considers the subject from a gynæcological point of view, while Voltolini's work is confined to the use of the cautery in laryngology. The others are more general in their scope.

Amussat's monograph of 125 pages, printed upon exceptionally fine paper, and illustrated by forty-four wood cuts, immediately attracts attention. It contains a brief historical review of the galvano-cautery, followed by the histories of forty-two cases treated by the author. These embrace abscesses, cysts, erectile tumours, lymphatic engorgements, phymosis, anal and vulvo-vaginal fistulæ, uterine polypi, rectal and urethral strictures, tracheotomy, tubercular testes, pediculated tumours of the skin, and diseases of the cervix uteri. The figures with which the book is bountifully supplied, illustrate morbid growths removed by the author, and also several instruments devised by him to meet special emergencies. The work is exceedingly interesting, but will prove useful and suggestive to surgeons already practically familiar with galvano-cautery, rather than to those who seek preliminary information upon the subject. These latter should first read Middeldorpf, v. Bruns or Boeckel, the first two in German, the last in French.

Now that appliances for galvanic and other forms of ætneral cautery are so cheap, simple, and convenient, and their uses so manifold, a systematic work on the subject in the English language is greatly needed.

H. G. P.

ART. XLI.—*Compendium of Histology. Twenty-four Lectures.* By HEINRICH FREY, Professor. Translated by GEORGE R. CUTTER, M.D., Assistant Surgeon N. Y. Eye and Ear Infirmary. Illustrated by 208 engravings on wood. 8vo. pp. viii., 274. New York: G. P. Putnam's Sons, 1876.

FREY's larger and fuller work on Histology is so well known that nothing is needed in way of critical analysis of the present book. In his preface he states

briefly that "a short compend of the most essential facts [of Histology] is desirable for students and practising physicians," because, "the hand-books have necessarily become constantly more voluminous in consequence of the immense wealth of materials." This want is felt no less in this country than in Germany. Many a hard-worked doctor, who would be too weary to pore over the exhaustive treatise of Stricker, will delight to turn to this excellent *résumé* of our knowledge, and find the gist of what he wants to know. We therefore welcome the book as a most valuable and timely addition to our medical literature. The author is one fully competent to deal with the subject. Instead of dogmatizing on doubtful points, he frankly states our want of knowledge on many subjects, yet he does not fear to express his opinion on mooted questions, as, for example, in discussing the similarity of striated and non-striated muscle or the cell wall of the blood corpuscles. This he believes to be merely a denser outer layer, and on p. 22, he quotes a remarkable experiment in proof, that when they are heated to 52° C. they begin amœboid movements in which not infrequently portions are detached.

Dr. Cutter has, in general, done his work well, yet we are very frequently reminded that we are reading a German book "done into English." We should scarcely speak of dead cells as "cell corpses," nor when a reagent shows the nucleus of a cell, would we say "many reagents *let it show out* from the now discoloured cell" (p. 23). "Wandering lymphoid cells are *not wanting*" [found], is an expression used more than once. So, also (p. 107), "when the former has reached a certain size, *induction lymphatic vessels*, vasa afferentia penetrate, *for the most part, manifoldly*, into its convex surface," and (p. 185), "The bloodvessels *circumvolute the convoluted* seminiferous canals," and (p. 16) "minimal thin layer" are rather German than English in expression. The constant use of protoplasmia for protoplasm, and of ovarium for ovary, etc., is needless in an English book. But when he uses "*overlays*" for "overlies" (p. 8), and "*ciliæ*" for "cilia" (5 times on pp. 34 and 35), we must protest emphatically.

The plates are, as a rule, delightful to look upon. They are, of course, reproductions from the larger work, and are as clear to the eye as they are exact and comprehensible. A few errors we have observed in the explanatory text. Thus, in Fig. 39, the star is omitted from "*f**;" in Fig. 99, "*d*;" and in Fig. 165, "*b*," are omitted. In Fig. 197, "*B*" is printed for "*R*;" and in Fig. 194, the semicolon should follow, and not precede "*d*."

No doctor who wishes to keep up with the times, and who has neither Stricker's Manual nor Frey's larger book, can afford to be without this excellent work.

W. W. K.

ART. XLII.—*A Manual of Midwifery*. By ALFRED MEADOWS, M.D. Lond., F.R.C.P., Fellow of King's College, London, Physician Accoucheur to St. Mary's Hospital, and Lecturer on Midwifery and the Diseases of Women and Children at St. Mary's Hospital Medical School, etc. Second American, from the third London edition, revised and enlarged, with one hundred and forty-five illustrations. 8vo. pp. 490. Philadelphia: Lindsay & Blakiston, 1876.

HAVING very freely noticed the first American edition of this work in the October number of this Journal for 1872, we have but little to add now, as the increase in the volume amounts to less than twenty pages, and the additions are

not very material, except in the list of illustrations, which is increased by upwards of sixty wood-cuts. Although there is much in this work to commend it to the American practitioner, we wish that in the present edition certain historical errors noticed in our former review had either been corrected or explained; we refer to the *earliest record* of the Cæsarean operation; and the statement with regard to the results of the cases that have been reported in this country. The writer has endeavoured not only through leading journals but, by a full written record, to acquaint the obstetricians of Great Britain with the results to mothers and children of this operation in the United States, down to the year 1873, and yet, in the present year, Dr. Meadows does not appear to have found out anything about it, but the very imperfect and erroneous table made years ago, and slightly added to since, by Dr. Fleetwood Churchill.

Dr. Meadows says, on page 272, "Now according to the statistics, it appears that in British and American practice rather more than two-thirds of the mothers die, and about one-half of the children." Why he should have coupled us with his own country in this statement, it is difficult to understand, as we are by no means upon the same footing. Of the first hundred British operations, down to 1869, eighty-four were fatal to the mother, and forty-three to the child. That is, a saving of sixteen women out of a hundred. In the American table, the 27th operation recorded, saved the life of the sixteenth case. About fifty per cent. of American cases have been saved up to the present time. Take all the promptly performed operations, *i. e.*, within twenty-four hours from the commencement of labour, and we have a saving of sixty-six per cent. of the mothers and eighty per cent. of the children, as the result of the operation when *properly performed* in this country; for there is no greater obstacle to success than the ruinous delay so often practised before the operation is determined upon.

The chapter (v.) by Dr. Meadows upon the Cæsarean operation, is an excellent condensation of the subject, taking up the character of cases to be operated upon, the importance of early interference, and the manner of performing the operation. We are glad to see in this article, that he has become a convert to the importance of using uterine sutures, and especially recommends the silver wire cut close. In the case which terminated so successfully under the care of Dr. H. C. D'Aquin, of New Orleans, in 1867, after ten days of labour, where there was complete atony of the uterus; and in some other instances in this country, sutures saved the lives of the women.

Part III., Chapter III., upon the "management of natural labour," embracing sixteen pages, is an admirable article, and one well worthy to be read and acted upon by obstetrical practitioners. It especially commends itself to those who have but recently entered the ranks of the profession, and will greatly aid them in properly conducting their cases.

As a whole, we have only to repeat the recommendation of the volume, as in our previous notice.

R. P. H.

ART. XLIII.—*Illustrations of Clinical Surgery.* By JONATHAN HUTCHINSON, F.R.C.S. Fasciculus IV. Folio, pp. 64-87. Philadelphia: Lindsay & Blakiston, 1876.

ADMIRABLE as the preceding parts of this work have been, the present is, perhaps, of greater value than any of the earlier fasciculi. This is partly due to the excellent character of the letter-press, which, though described on the title-page merely as explanatory, is, in reality, the cream of the Astley Cooper

prize essay for 1864, containing as a basis a table of forty-six fatal cases of head injuries observed during three years by Mr. Hutchinson and his colleagues at the London Hospital. Two other numbers, illustrative of the same class of cases are promised by Mr. Hutchinson, which if of equal interest with the present will constitute an important portion of his work. We feel some regret that they have not come to hand with the one now before us, that they might have been noticed together and in some detail. In this part are contained illustrations of inflammation of the arachnoid, after compound fracture; inflammation of pia mater at the base of the brain, after fissure-fracture of the petrous bone; passive congestion, and diffuse ecchymosis of pia mater, and contusion of the surface of the brain. The subject is one to which Mr. Hutchinson has given much attention, and with which he is fully qualified to cope. No surgeon whose financial ability extends to illustrated books can afford to be without this most valuable and beautiful work.

S. A.

ART. XLIV.—*The Theory and Practice of Medicine.* By FREDERICK T. ROBERTS, M.D., B.Sc., M.R.C.P., Assistant Physician and Assistant Teacher of Clinical Medicine at University College Hospital, etc. etc. Second American from the last London edition. Revised and enlarged. 8vo. pp. 920. Philadelphia: Lindsay & Blakiston, 1876.

THE second edition of Dr. Roberts's work on *The Theory and Practice of Medicine*, bears abundant testimony to the industry of its author, for not only has a great part of it been rewritten, and much new matter added, but there are also few pages in it which do not show the marks of careful revision. These changes all seem to us judicious, and while they have unquestionably added much to its value as a text-book, have also rendered it less open to the charge of incompleteness we made against the first edition in the notice of it, which appeared in the number of this Journal for April 1874. Among the more important of the additions is a chapter "On the Diagnosis of Acute Specific Diseases," in which the distinguishing characteristics of these affections are arranged side by side in tabular form—a plan which will facilitate very greatly the study of differential diagnosis.

We observe that the author has removed the so-called epidemic cerebro-spinal meningitis from the list of purely local diseases and placed it where we think it properly belongs, among the fevers. Notwithstanding the large increase of matter, the publishers have been able, by a slight increase in the size of the page, and by a judicious arrangement of type, to issue the work in a less bulky, and, therefore, a more convenient, form than before.

J. H. H.

ART. XLV.—*Chemistry: General, Medical, and Pharmaceutical; including the Chemistry of the U. S. Pharmacopœia.* By JOHN ATTFIELD, Ph.D., F.C.S., etc. Seventh edition, revised from the sixth (English) edition, by the Author. 12mo. pp. 668. Philadelphia: H. C. Lea, 1876.

THIS work is now so well and favourably known, that it is only necessary to announce the appearance of a new edition, and to note the principal changes

or additions that have been required either by alterations in the Pharmacopœias or the improvements in chemical science. To render the work more useful to the commencing chemical student, and to facilitate practical manipulations, many well chosen wood-cut illustrations (87) have been introduced. Much of the instruction in the principles of Chemical Philosophy has been revised, and dispersed under different heads appropriate observations on the same subject have been inserted, rendering these principles clearer and more impressive. Additional instruction and improved processes of analytical value have been introduced throughout, which have increased to a considerable extent the number of pages, although others have been omitted when this could be done without disadvantage to the student. Of these, Siebold's method for the detection of chlorides in the presence of bromides, and the improved processes in relation to the examination for cinchona alkaloids may be taken as examples. Finally, the index has been much enlarged, not only increasing the facilities for reference to new matter introduced, but in some degree to the original text. The style and appearance of this correspond, except in increased size, to the former American editions.

R. B.

ART. XLVI.—*Observations on Diseases of the Rectum.* By T. B. CURLING, F.R.S., Consulting Surgeon to the London Hospital. 4th edition. 8vo. pp. xvi., 244. Philadelphia: Lindsay & Blakiston, 1876.

It is now twenty-five years since the first edition of this work was issued. It has grown considerably in size and completeness, keeping pace with the enlarged experience of the author. It speaks well for the value of the treatise and for the intelligence of the medical profession, that a work on so special a subject should have reached a fourth edition. Any extended criticism of a work so stamped with approval is superfluous, and we would only suggest that Mr. Curling would do well in any future edition to elaborate the subject of recto-vaginal fistula which is here dismissed in a single brief page. His experience in a disease so annoying to the patient and so difficult of cure would be hailed with pleasure by the profession.

W. W. K.

ART. XLVII.—*Hay-Fever, or Summer Catarrh; its nature and treatment.* By GEORGE M. BEARD, A.M., M.D., Fellow of the New York Academy of Medicine, etc. etc. 12mo. pp. 266. New York: Harper & Brothers, 1876.

THIS little book, extensively heralded, and anxiously looked for by many, will possess much interest for the large army of martyrs to the complaint of which it treats. It contains the record of some facts which may prove of value to those physicians, whose opportunities for observing this affection have been limited. For one, however, who, like the writer of this notice, has had a life-long and personal intimacy with the malady, it does not supply much that is new.

Dr. Beard claims to have established the following conclusions by his researches. First, that all the forms of summer catarrh are identical in nature. This is thought to be determined by the discovery of an intermediate form, which, confined to the month of July, supplies the missing link required to unite the rose-cold of June with the hay-fever of August. This middle variety

we have not ourselves observed, though the same conclusion had been arrived at from the knowledge of the June and August forms existing in different members of the same family, identical in symptoms, and modified by the same measures. Dr. Beard thinks that he has demonstrated, second, that the nervous system is principally at fault. We cannot agree with the author in thinking that the intelligent medical man will be surprised at his conclusion, merely because the sufferers from this affection are oftentimes vigorous and full-blooded, for, surprise at such a combination would argue great ignorance, but we suppose the lay reader, for whom the book is largely intended, may, indeed, be amazed, as he is likely to be at this, or many another revelation derived from a science with which he is unacquainted. The same remark applies equally to the easily appreciated third conclusion arrived at by Dr. Beard, namely, that the excitants of dust, pollen, heat, etc., while not the primary causes, may co-equally operate with peculiarities of nervous organization to produce this disorder. We remember a similar conclusion being reached many years since in a graduation thesis, deservedly consigned to that limbo of oblivion to which such efforts commonly go. A really valuable conclusion of Dr. Beard's is that in which he demonstrates the hereditary character of the malady.

The division into catarrhal and non-catarrhal regions made by Dr. Wyman, is deemed somewhat too arbitrary by Dr. Beard; he, however, agrees with that gentleman in regarding the White Mountains as a sure remedy, or at least as a certain alleviation, in all cases. Although the locality mentioned is admitted not to be the only one beneficial to sufferers from periodical catarrh, and the relief obtained by many at sea or upon the seashore is spoken of, special mention is made of few other resorts. This is perhaps little to be wondered at in a book dedicated to the United States Hay-Fever Association, which has its headquarters in the White Mountains. For the members of this Association the book has been principally written, and they will doubtless enjoy reading the vivid accounts of each other's sufferings portrayed upon its pages. The medical profession will find that a good many of these narrations resemble rather old wives' tales than scientific records; for they well illustrate that part of human nature which causes us to wax eloquent when our own sufferings are in question.

Dr. Beard gives some valuable practical suggestions concerning the alleviation to be obtained from the use of drugs, but even here the dead fly in the ointment is apparent, for the warnings given as to the inconveniences and dangers attendant upon the use of some among them, such as quinia and arsenic, cannot but be regarded as unprofitable knowledge for the laity.

A word about the society to which the book is dedicated, whose articles of association occupy a note in its pages. One of these articles, No. V., states that "it shall be the duty of each member . . . to report . . . any remedy which may come to his or her knowledge during their natural life, and afterward, if permitted!" This article is evidently highly esteemed by the members of the Association, for it is the only one to which a note of admiration is appended, but whether it is the construction of the sentence, or the high transcendentalism of the sentiment which is the object of their admiration, we are not told. We do not profess to be thoroughly informed of the contributions to our knowledge derived from the spirit world, since Saul invoked the aid of Endor's witch, but we do not at present recall any valuable agents added to the materia medica by such means, so that we may be excused for entertaining but small hopes of benefit from that direction. We think that Dr. Wyman's book will continue to be the one to which the profession will go for information about this disease, though Dr. Beard's brochure will unquestionably find many purchasers.

ART. XLVIII.—*Annual Report of the Surgeon-General, United States Army, 1876.*

FROM this interesting document we glean the following particulars:—

The monthly reports of sick and wounded represent an average mean strength of 21,681 white, and 2002 coloured, troops.

Among the *white troops*, the total number of cases on the sick list was 37,561, being at the rate of 1732 per 1000 of mean strength. Of this number, 32,495, or 1499 per 1000 of mean, were taken on sick report for disease, and 5066, or 233 per thousand of strength, for wounds, accidents, and injuries of all kinds.

The total number of deaths from all causes was 518, or 24 per 1000 of mean strength. Of these, 180, or 8 per 1000, died of disease, and 338, or 16 per 1000, of wounds, accidents, and injuries.

The total number of white soldiers discharged on surgeon's certificate for disability was 561, or 26 per thousand, and precisely the same of coloured soldiers.

Among the *coloured troops*, the total number of cases of all kinds was 3462, being at the rate of 1729 per thousand of mean strength. Of these, 2941, or 1469 per 1000, were cases of disease, and 521, or 260 per thousand, were wounds, accidents, or injuries.

The total number of deaths from all causes was 26, or 13 per 1000 of mean strength. Of these, 16, or 8 per thousand, died of disease, and 10, or 5 per 1000, of wounds, accidents, or injuries.

"It will be seen from the foregoing that the health of the army during the year has been good, and the mortality from disease unusually small. On the other hand, the number of deaths from wounds has been exceptionally large. The figures given above include two hundred and sixty-seven (267) officers and men killed in battle or skirmishes with hostile Indians, who are not embraced in the number of cases of wounds, accidents, and injuries taken on sick report. Of this number, fifteen (15) commissioned officers, including one (1) medical officer (Assistant-Surgeon George. E. Lord, U. S. Army), one (1) Acting Assisting-Surgeon (James M. De Wolf), and two hundred and thirty-two (232) enlisted men, fell in the action on the Little Big Horn River on June 25th."

Strong testimony is borne as to the policy of promptly removing any garrison threatened with yellow fever to a healthy locality.

"On the 1st Oct. 1875, a case of yellow fever, which proved fatal next day, was recognized in the hospital of Company E, 3d Infantry, at Coushatta, Louisiana. The greater part of the company was promptly moved, October 2d, and went into camp at Springville, two miles distant. The portion of the command thus moved entirely escaped; but thirteen (13) additional cases, and eight (8) deaths, occurred in the detachment left at Coushatta with the hospital and company property. Three of the laundresses also had the fever, and one of them died. The last case occurred November 20th, and the last death November 23d. Assistant-Surgeon R. Barnett, U. S. A., who was in charge of the hospital during this epidemic, reports that he was unable to ascertain the mode of its introduction. It is well known, however, that yellow fever had been prevailing as an epidemic at New Orleans, and the situation of this post on the Red River would suggest the probability of the importation of the disease from that place."

The work performed in the Record and Pension Division is stated to be behindhand, owing to the inadequate clerical force provided. By legislation at the last session of Congress, that force, instead of being increased, has been still further reduced by the discharge of 26 clerks.

The continuation of the surgical portion of the Medical and Surgical History of the War, and the compilation of descriptive catalogues of the surgical and anatomical materials of the Army Medical Museum, have been prosecuted with a reduced clerical force. The amount of labour accomplished with this restricted means is remarkable.

"To the material collected at the close of the fiscal year ending June 30, 1875, for a report of surgical cases treated in the army during the period 1871-75, one thousand six hundred and seven (1607) cases have been added, making a total now collected of four thousand and ninety-three (4093) surgical cases, comprising one thousand seven hundred and twenty-seven (1727) injuries of the head and neck, three hundred and sixty-six (366) injuries of the trunk, one thousand one hundred and eleven (1111) injuries of the extremities, including two hundred and eighty-six (286) amputations and twenty-four (24) excisions, and eight hundred and eighty-nine (889) miscellaneous injuries, a mass of valuable surgical information, well worthy of publication."

The important government medical library is steadily being enlarged.

"About 2000 volumes, exclusive of pamphlets, have been added to the library during the past year. The subject catalogue, to which reference was made in my last annual report, is now nearly completed, and during the year there were printed and distributed a few copies of a specimen *fasciculus* of this catalogue, which were issued in order to obtain the opinions of those competent to judge as to whether it is desirable that such a work shall be printed and distributed, and also for criticism and suggestions as to the form of catalogue which would be most acceptable and useful. The responses, in the form of editorials, critical notices, resolutions of medical societies, letters, etc., have been so numerous, so favourable to the general plan adopted, and so unanimous in the expression of opinion that the entire work ought to be printed as soon as possible, as being of great value to medical writers and teachers not only of this country but throughout the world, that I am fully warranted in strongly recommending that Congress authorize the printing of the work by the government printer. The MSS. is in such a state of forwardness that copy can be furnished to the printer within a month after such authority is granted, and can be furnished thereafter as rapidly as the proofs can be properly read."

In hoping that Congress will at once provide the funds for the publication of the subject catalogue of the library, we are sure we express the sentiment of our entire profession. Such a work will be invaluable to students, and contribute immensely to the advancement of our science. Its utility will not be confined to the profession—the public will reap the benefit of it.

ART. XLIX.—*A Century of American Medicine. 1776-1876.* By EDWARD H. CLARKE, M.D., late Professor of Materia Medica in Harvard University, etc.; HENRY J. BIGELOW, M.D., Prof. of Surgery in Harvard University, etc.; SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Prof. of Surgery in Jefferson Med. College, Phila., etc.; T. GAILLARD THOMAS, M.D., Prof. of Obstetrics, etc., in Col. of Physicians and Surgeons, New York, etc.; and J. S. BILLINGS, M.D., Librarian to the National Medical Library, Washington, D. C. Royal 12mo., pp. 366. Philadelphia: Henry C. Lea, 1876.

THE essays comprising this volume originally appeared in the pages of this Journal during the past year, and therefore do not require an introduction to our readers. It is believed that they truthfully reflect the progress of medicine in our country during the past century, and that they are in every respect worthy of the reputation of their authors. The general commendation which they have elicited has induced Mr. Lea to reprint them in handsome form as a worthy memento of the first century of American Medicine.

ART. L.—*The Medical Men of the Revolution, with a Brief History of the Medical Department of the Continental Army, etc.* By J. M. TONER, M.D. 8vo., pp. 140. Philadelphia, 1876.

THIS little volume consists of an address delivered before the Alumni of Jefferson Medical College, March 11, 1876. It seems to be in some degree an expansion of an essay by the same writer, entitled "Contributions to the Annals of Medical Progress and Medical Education in the U. S., before and during the War of Independence."¹ As here presented, the foot-notes rather exceed in bulk the text of the address. They, however, greatly add to the value of the work, being largely made up of extracts from original journals and letters of the time, together with short biographical sketches. At the end we find an alphabetical list of some twelve hundred names of medical men engaged in the revolution, with their States and their positions.

Among Pennsylvania physicians who held prominent positions on the Continental medical staff were Adam Kuhn, Wm. Shippen, Jr., and Benj. Rush. The latter was one of the very few who left any written records of their professional experience in camp, field, or hospital.

Those of us who are accustomed to regard the olden times as more pure and honest than the present, can hardly retain the illusion after the perusal of records such as are found in Dr. Toner's books, in the Life of Dr. Warren,² and in the Historical Notes of the U. S. Med. Dept., 1775 to 1873.³ Misunderstandings, jealousies, cupidity, and treachery, prevailed then as in later years. Nor was the treatment of the sick soldier better than now. The mortality in military hospitals was at times frightful. Fevers, diarrhoeas, and other filth-engendered maladies, often prevailed to an extent almost incredible to the modern surgeon. Sanitary science was little known and less practised. Certainly, as far as the preservation of the soldier's health is concerned, and his restoration when sick or wounded, the present time need not fear comparison with the old.

But while we remember that the medical men of "'76" were of like passions with ourselves, and in many points less fully equipped for their work, we have no desire to undervalue their important and generally self-denying services. Inasmuch as history usually preserves the names of those who destroy life, to the exclusion of those who save it, we are glad Dr. Toner has sought out and gathered together the memoranda which form this little volume. B. L. R.

ART. LI.—*Public Libraries in the United States of America; their History, Condition, and Management.* Special Report, Department of the Interior. Bureau of Education. Part I. 8vo. pp. 1187. Washington: Government Printing Office, 1876.

THIS report constituted a part of the Educational exhibit made by Government at the recent Centennial Exhibition. We believe the work will be a surprise, and a cause of pride and pleasure to all American readers. Mr. S. R. Warren and Major S. N. Clark are the editors or compilers, and are assisted by a score of contributors from among the most learned and accomplished librarians and bibliographers in the country. In the statistical portion of the volume we find a list of 3647 public libraries, with the chief facts capable of tabular statement set down against each. The aim was to include all

¹ Am. Journ. Med. Sciences, April, 1875.

² Ibid. 1874.

³ Ibid.

public libraries (except those of common or district schools) which possessed three hundred volumes or more. The arrangement is alphabetical, according to States and towns. Thus, the enumeration begins with Alabama, and the town of Auburn. No. 31 is the library in Tuskegee, of the same State; and the next is in Alaska, at Sitka. Thus any library of known location can be at once found. Similarly arranged, we find a catalogue of librarians, for whose names the former table did not afford space. Another curious table exhibits, in chronological order, the catalogues printed in the United States. The first on the list is that of Harvard College, in 1723. The second and third are of the Philadelphia Library, in 1732 and 1741, printed by Benjamin Franklin. The entire number exceeds one thousand. Many other tables present, so far as it could be obtained, nearly all conceivable information concerning American libraries.

The larger portion of this immense volume is made up of essays upon libraries, general and especial; catalogues and indexes, and the art of making them; books, and the way to use them; historical societies; art-museums—in short, upon every subject relating to libraries and their uses. These essays are a perfect treasure-house of instruction and entertainment. No person concerned in establishing or managing a public library can fail to be helped and guided by such papers as “How to make Town Libraries Successful,” by F. B. Perkins; “Free Libraries,” by J. P. Quincy; “Public Libraries and the Young,” by Wm. I. Fletcher; “The Organization and Management of Public Libraries,” by Wm. F. Poole; “College Library Administration,” by Otis H. Robison; and many others. As mere pieces of literary workmanship, many of them are admirable. Some of the papers combine wit and wisdom in a most happy union—as, for instance, those on “Titles,” “Indexes,” and “Professorship of Books and Reading.”

Dr. Billings, U. S. A., contributes a sketch of the “Medical Libraries in the United States.” This paper contains some valuable suggestions as to the formation of such libraries, and their proper cataloguing. Prof. Theo. Gill, M.D., in an article on the “Scientific Libraries of the United States,” presents a directory to the annual volumes published abroad, which chronicle the discoveries and advances in each branch of science, and which, he justly states, should be found in every library resorted to by the scientific investigator.

Altogether, this volume is one of extraordinary value and interest.

B. L. R.

ART. LII.—*Transactions of the College of Physicians of Philadelphia.*
Third series. Vol. II. 8vo. pp. lxviii., 186. Philadelphia, 1876.

This volume contains the papers read before the College from October, 1875, to July, 1876, to which are prefixed lists of the Officers, Fellows, and Associates of the College, and Biographical Memoirs of two of its Fellows, Drs. George W. Norris and John S. Parry. Both these memoirs are exceedingly well drawn up, and delineate briefly, appreciatively, and truthfully the high character and valuable labours of the above-named eminent Fellows, whose loss, the College, the profession, and the public, have had to deplore during the past year.

Thirteen papers, with abstracts of the discussions which their reading elicited, are embraced in this volume, all of which will repay careful perusal. The volume is issued in the same style as its predecessors, and like it, is creditable to the College, both as to the value of its contents, and its elegant typographical appearance.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Reflex Movements of the Cranial Dura Mater.*—M. BOCHEFONTAINE recently presented a note to the Académie des Sciences on some particulars of the "reflex" movements which are produced by mechanical stimulation of the cranial dura mater. His observations are of great interest, both physiological and pathological. That the membrane is sensitive is shown by the fact that, when certain portions are irritated, cries of pain and general movements are produced. But the mechanical stimulation of certain parts produces, under certain conditions, movements limited to one or several parts of the body. The facts were observed in dogs, which were experimented on in order to study the excitability of the gray cortex of the brain. Some were etherized, others chloralized by intravenous injection, and others were slightly stupefied by curare. One part of the skull had been removed to expose the cranial dura mater. Under these circumstances, by scratching gently with the point of a dissecting forceps the parts of the dura mater situated at the level of the middle of one side of the cerebral hemisphere, the eyelids closed on that side, and sometimes the upper lip was raised, the nose was drawn to that side, and the ear was moved. A stronger irritation occasioned a simultaneous movement of the limbs on the opposite side, and of the tail, which deviated from the side of the irritation. A still stronger irritation, rapidly and several times repeated, determined movements of both sides of the face, of the neck, and of all four limbs. The movements of the limbs on the same side were more energetic than those of the opposite side. The irritation of several points of the dura mater situated anteriorly in the frontal region also caused isolated movements of the eyelids, or of some of the muscles of the face. These movements were not observed when the points were irritated outside or behind the middle portion which was first excited. In the latter case the irritation was followed only by movements of the trunk.

M. Bochefontaine next endeavoured to ascertain whether these phenomena, observed when the dura mater was intact, were equally to be observed when it was divided so as to expose the convolutions. He divided the anterior portion of the dura mater into four segments. When the anterior segment was indented with the teeth of the dissection forceps, whether strongly or gently, there occurred corresponding movements of the limbs, or limited to the orbicularis of the eyelid, just as in the experiments in which the dura mater had been merely scratched with the point of the forceps. The compression of the outer and posterior segments caused no movements limited to the face, and only those of the members and of the different parts of the body. On pinching the inner segment, seven or eight millimetres from the falx cerebri, no movement was

produced. Hence the conclusion is drawn that the transmission of the stimulation or irritation of one side of the dura mater is not by any sensory nerve-fibres coming from the opposite side. The results are manifestly not due to any accidental stimulation of the subjacent gray cortex, since this is inexcitable by mechanical agencies. But in order to avoid all chance of error from this cause, M. Bochefontaine repeated his experiments after having removed the gray cortex and the subjacent white substance from the whole of the extent of the sigmoid convolution. The phenomena observed were exactly the same as those noted before the removal of the cerebral substance. It is thus clear that mechanical stimulation of the cranial dura mater on one side will cause contraction in one or more of the facial muscles confined to the corresponding side. To obtain this result, the irritation of the dura mater must be slight, or the animal must be placed under a certain degree of anaesthesia. A stronger mechanical stimulation causes, at the same time as the contraction of the face, movements in the limbs of the corresponding side; and, if the stimulation be still more intense, movements occur in all four limbs, those of the same side being moved more strongly than those of the opposite side.

What path is taken by the irritation in passing from the cranial dura mater to the muscles? is a question which at once presents itself. When the movement is confined to the orbicularis of the eyelids, the course is a simple one. It can reach the nerves directly as they traverse the substance of the membrane. A similar explanation accounts for the movements of the face on the corresponding side. It is more difficult to understand the mechanism by which the movements are produced in the corresponding half of the body. Were the stimulation direct, it would seem that the movements should occur in the opposite limbs. As it is not so, the conclusion is that the stimulation is transmitted directly to the corresponding side of the spinal cord. When all four limbs are moved the irritation is transmitted, both directly and by decussation, to both sides of the cord. But the direct transmission is more intense than that which passes by the decussation of the pyramids.

These observations are undoubtedly of great interest and importance. They need, as they will no doubt receive, repetition and corroboration at other hands. They have direct bearing on the phenomena obtained on irritating, by electricity, the surface of the brain; they are of great significance with regard to the origin of the symptoms which attend inflammation of the dura mater, and their character has an important bearing, in more than one respect, on the remarkable opinions of Dr. Brown-Séquard now being laid before the profession.—*Lancet*, Oct. 7, 1876.

2. *Nervous Apparatus of the Lung*.—Dr. WM. STIRLING described at the last meeting of the British Association for the Advancement of Science the nervous apparatus of the lung. He pointed out that numerous nerve-cells are found in various organs of the body, and that the lung is no exception in this respect. There were numerous nerves entering the lung and accompanying the bronchi and bloodvessels; these nerves were derived from the pneumogastric and sympathetic nerves, which nerves accompany the bloodvessels. In the course of these nerves numerous small masses of nervous matter, constituting ganglia, quite visible to the naked eye, were intercalated. These ganglia were most numerous around the bronchi at the base of the lung, and could easily be isolated by means of a dissecting microscope. The probable destiny of each of the two sorts of nerve-fibres—white and gray—found in the ganglia was indicated; the former supplying the bronchial mucous membrane and the bronchial muscles, while the latter probably presided over the muscular fibres of the bloodvessels, and so, controlling their calibre, regulated the amount of blood passing through them.—*Brit. Med. Journ.*, Sept. 23, 1876.

3. *Effect of Esmarch's Apparatus on the Circulation*.—Dr. GANGEER read before the British Association, a paper on the changes of circulation which are observed when blood is expelled from the limbs by Esmarch's method. He stated that experiments carefully conducted on Esmarch's method with healthy students has produced the following results. When the blood was expelled

from one leg, the heart beat more rapidly, only for a short time, and the same result followed the application of the bandage to the second leg. When the heart began to beat at its usual rate, the tourniquets were loosened; and in an instant the limbs, previously blanched, became suffused with a blush, while sensibility therein became more and more blunted, and the heart bounded off at an exceedingly rapid rate, to return, however, to its normal beat almost immediately. In applying the bandage, the blood in the veins was first expelled, then that in the arteries, and next there was an expulsion also of the lymph. He was of opinion that compressing the limb would send more blood into the veins than into the arteries, and, as the lymph would go to swell the venous pressure, the venous blood *plus* the lymph would be greater in amount than the blood sent into the arteries. But the valves in the veins would prevent the increase of pressure in all parts of the system. It had been suggested that the increase of heart-beat when the bandage was applied was intimately connected with the diminution of the normal difference between arterial and venous pressure; that, if the right side of the heart be subjected to greater pressure, that would cause an increase of the cardiac contractions. These certainly were facts making it likely that an increase of pressure on the right of the heart tended to quicken the heart-beats, and the quick beats on the removal of the bandage were, no doubt, the result of the removal of the arterial pressure.—*Brit. Med. Journ.*, Sept. 23, 1876.

4. *Intestinal Secretion and Movement.*—Dr. McKENDRICK submitted to the British Association the report of the Committee on Intestinal Secretion and Movement. The conclusions at which the committee arrived were as follows: 1. Application of various soda and potash salts to the intestinal mucous membrane produces a more or less profuse secretion; that caused by sulphate of magnesia, acetate of potash, sulphate of soda, and tartrate of potash and soda being more abundant. 2. The presence in the intestines or in the blood of atropia, morphia, chloral, etc., does not prevent the abstraction of sulphate of magnesia. 3. The splanchnic nerves are as usually admitted the vaso-motor nerves of the intestines, but either have no centrifugal fibres to their muscular coats, or affected them only indirectly by diminishing their supply of blood. 4. The secretory nerves of the intestines have the small ganglia of the solar and superior mesenteric plexuses for their centres, and this secretion is unaffected by the splanchnics, the vagi, or the dorso-lumbar parts of the cord. 5. Destruction of the lumbar part of the cord after extirpation of the solar plexus produces hemorrhage or hyperæmia of the intestinal mucous membrane, which is absent after division of the splanchnics, destruction of the semilunar ganglia and solar plexus, or division of the mesenteric nerves themselves. 6. The splanchnics are the afferent nerves for peristalsis of the intestine, the efferent stimulus probably reaching the intraparietal ganglia through the lumbar cord and abdominal sympathetic, the former effect being inhibitory, and the latter stimulating to these ganglia. These results, the President stated, had been drawn from numerous experiments. He considered that investigations of this kind promised to be of very great value with reference to practical medicine; for example, with regard to the knowledge of purgative medicines.—*Brit. Med. Journ.*, Sept. 23, 1876.

5. *Clinical Confirmation of Dr. Ferrier's Researches.*—At the October meeting of the Manchester Medical Society, Dr. DRESEHFIELD brought forward a case of unusual interest, affording remarkable clinical confirmation of the accuracy and practical value of Dr. Ferrier's researches as to the effect of electrical stimulation of the various cerebral convolutions. On September 8, 1874, a man aged twenty-eight, with a syphilitic history, presented himself at the out-patient room of the Royal Infirmary to be treated for epilepsy. The case was one of a series which Dr. Dresehfeld reported in the *Practitioner* for May, 1875, in a paper entitled "On some Cases of Syphilitic Nervous Disease." Potassic iodide was administered, and the convulsions ceased. The patient returned to the hospital at intervals on account of a recurrence of the fits, and on each occasion was benefited by the same treatment. When there were no

longer any actual fits, the man continued to suffer from occasional and sudden attacks of numbness in the left hand, similar in character to the aura which preceded his epileptic seizures. This numbness was accompanied with clenching of the fist, flexion of the wrist, pronation of the forearm, and retraction of the angle of the mouth on the same side. Now, these were precisely the movements repeatedly obtained by Dr. Ferrier when he applied an electrical stimulus to the ascending parietal convolution and angular gyrus in the brain of the monkey (*Proceedings of the Royal Society*, vol. xxiii. page 410). Dr. Dreschfeld, therefore, diagnosed syphilitic disease in that region, of a chronic inflammatory nature. Two years afterwards the patient died of phthisis, under Dr. Dreschfeld's care, and on October 2, 1876, Dr. James Ross made a post-mortem examination. He found the dura mater firmly adherent to the subjacent tissues at a distinctly localized spot over the region indicated, with softening of the superficial layers of the convolution. The rest of the brain was healthy. Dr. Dreschfeld pointed out in his remarks that the case was also a fresh confirmation of the truth of Dr. Hughlings Jackson's view, that epilepsy is due to an explosion of nerve-force in the cortical portion of the brain.—*Medical Times and Gazette*, October 28, 1876.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Salicylic Acid*.—Mr. J. A. ERSKINE STUART has published (*Edinburgh Med. Journal*, November, 1876) some experiments which he has made with this article, and gives the following as his conclusions: "That it is an antiseptic, deodorizer, and astringent, possessing these three properties in a marked manner. That it produces a specific action on the mucous membrane of the mouth, nose, and throat, is undoubted, as the catarrhal symptoms are produced in these regions whether it is taken by the mouth or rectum. That, from its rapid absorption by the blood, it is quickly carried through all parts of the economy, and its action is thus quickly manifested. The antiseptic properties being so marked, and its character being non-poisonous, it is sure to prove efficient in zymotic disease; in the same way that sulpho-carbolate of soda has been used.

"Salicylic acid, although proved by Godeffroy to be three times as strong an antiseptic as carbolic acid, is so difficult to dissolve, that its spray is not efficacious. Its use as an external antiseptic is thus much prevented, as, from its non-irritating, and non-poisonous qualities, it is otherwise eminently suited for use externally. As it is not likely to rise into much fame as an external antiseptic, I shall conclude with a few remarks as to how its action may be explained in three diseases in which it has been used with success, viz., rheumatic fever, typhoid fever, and diphtheria.

"No explanation of the changes which salicylic acid undergoes in the economy has yet been attempted, as far as I have observed in the journals. Is it not probable, as I mentioned previously, that salicylic acid, from the heat to which it is exposed in the alimentary canal, splits into carbolic and carbonic acids; that the carbonic acid, escaping as it passes down, causes the sensation of choking; and that the carbolic acid, coming in contact with gastric juice, forms an innocuous compound with some of its salts, and thus carries out its actions? This is the chemical explanation of its action, at least. By using the prescription before mentioned, combining the potash and salicylic acid, we get rid of the carbonic acid gas, and thus prevent much of the burning in the throat.

"*Rheumatic Fever*.—No doubt is expressed among practitioners as to the beneficial action of this drug in rheumatic fever. It has been tested largely in both hospitals and private practice, and found not only to shorten the disease, but also to lower temperature and relieve pain. Cases treated with con-

tinuous small doses are soon better. Its action in this disease is antipyretic. Possessing many of the properties of quinine, in the form of salicine, the temperature is lowered much in the same way as a large dose of quinine would do.

"Typhoid Fever.—In this disease, salicylic acid has been little used in this country, but from German sources we have reliable information regarding its application. Dr. Reiss, of Berlin, used as large a dose as four scruples. He found that often after the first dose, and usually after the second, the temperature fell below the normal, and remained so for twenty-four hours. In these cases, only one daily dose of the under-mentioned formula was given, and it was found that eight or ten doses were sufficient. The formula for a dose was as follows:—

"R. Acid. salicyl.; Sodæ carb. āā ðiv; Tinct. aurant. ʒj; Aquæ ʒiiss. M.

"The result was that, generally after the fourteenth day of the fever, there was no abnormal rise of temperature. Dr. Reiss found that this result happened in the most of 260 cases which he treated.

"The action in typhoid fever may be explained thus: It acts in such enormous doses as an excellent astringent on the bowels, and also as an antiseptic on the system generally, as well as on the bowels.

"Diphtheria.—Wagner used it as a remedial agent in diphtheria, and also in an epidemic of it, with success. Fronthelm also used it as a prophylactic in this disease, and it seems to me that it will be yet much used as a prophylactic in all febrile disease. My theory of its action in diphtheria is this, that it acts on the body generally as an antipyretic, and that, by setting up its specific catarrhal action on the mucous membranes of the throat, it helps to arrest the disease.

"In the *Edinburgh Medical Journal*, 1837, Dr. Blom ascribes the beneficial action of salicine to the fact that it acts as a tonic to the mucous membranes, and improves the character of the secretions. If this is the case, it may account in some manner for the action of salicylic acid in typhoid fever and diphtheria. Salicine is not so burning a substance to swallow as the salicylic acid, and it does not set up the characteristic catarrh which I mentioned."

7. *Action of Alteratives.*—Dr. T. LAUDER BRUNTON, in an interesting article on this subject (*Practitioner*, September, 1876), sums up the chief points in his article as follows:—

All medicines may be called alterative, but the name is specially applied to those which imperceptibly modify nutrition.

Nutrition is carried on in the intestine, and probably in the body, by means of ferments.

Alteratives probably modify nutrition by modifying the action of these ferments.

Nitrohydrochloric acid probably acts in headache, and also in the depression of spirits associated with oxaluria, by modifying the action of ferments in the intestine or liver.

Lithates are probably formed in the liver, and also in the muscles. The question arises—is nitrohydrochloric acid useful in stopping the lithates from disorder of the liver and digestion only; or is it also useful when the lithates arise from other causes?

Colebicum is probably useful in gout, by diminishing the production of uric acid.

Iodide of potassium acts on the lymphatics.

Mercury acts on the albuminous solids.

Is the action of iodides increased by giving salt?

8. *Action of Gelsemium Sempervirens.*—Dr. SIDNEY RINGER and Mr. WM. MURRELL have published (*Lancet*, Oct. 21, 1876) the results of a series of experiments made by them to ascertain the influence of gelsemium on the circulation. These experiments they say show:—

"1. That gelsemium produces but little, if any, effect on the pulse.

"2. That it does not affect the blood pressure.

"3. That in man it probably acts on the respiratory centre less energetically than in the lower animals.

"4. That in man it acts on the muscles of the eye, and produces other symptoms before it influences the respiratory centre.

"5. That in man it, in all probability, affects the spinal cord before the respiratory centre.

"6. That it exerts no influence on the mind, and none on the cutaneous sensibility.

"7. That it does not affect the temperature."

9. *Action of Alcohol on the Brain.*—Mr. T. C. KINGZETT read before the British Association a paper on this subject. He said the question of what became of alcohol taken into the system had been extensively studied. Thudichum was the first to determine quantitatively the amount of alcohol eliminated by the kidneys from a given quantity administered, and the result he obtained was sufficient to disprove the elimination theory then widely prevailing. Dupré and many others continued these researches, from which, according to Dupré, they might fairly draw three conclusions: first, that the amount of alcohol eliminated per day did not increase with the continuance of the alcoholic diet; therefore, all the alcohol consumed daily must of necessity be disposed of daily, and, as it was certainly not eliminated within that time, it must be destroyed in the system; second, that the elimination of alcohol following the taking of a dose was completed twenty-four hours after the dose was taken; and, third, that the amount eliminated in both breath and urine was a minute fraction only of the amount of alcohol taken. In 1839, Dr. Percy published a research on the presence of alcohol in the ventricles of the brain, and concluded "that a kind of affinity existed between the alcohol and the cerebral matter." He further stated that he was able to procure a much larger proportion of alcohol from the brain than from a greater quantity of blood than could possibly be present within the cranium of the animal upon which he operated. Dr. Marec, in a paper read before the British Association in 1859, detailed physiological experiments which he considered to substantiate the conclusions of Dr. Percy, inasmuch as they demonstrated that the alcohol acted by means of absorption on the nervous centres. Lallemand, Perrin, and Duroy had, moreover, succeeded previously in extracting alcohol from brain-matter in cases of alcoholic poisoning. But all these researches did not show the true action, if any, of alcohol on cerebral matter, and no method of investigation was possible until the chemical constitution of the brain was known. Thudichum's recent researches in this direction, together with some more recent investigations by Thudichum and the author, had placed within reach new methods of inquiry. In his research, he (Mr. Kingzett) had maintained the brains of oxen at the temperature of the blood, in water, or in water containing known amounts of alcohol. The extracts thus obtained had been studied in various ways, and submitted to quantitative analysis, while the influences exerted by the various fluids on the brain had been also studied. These influences extended in certain cases to hardening and to an alteration in the specific gravity of the brain-matter. Water itself had a strong action on brain-matter (after death), for it was capable of dissolving certain principles from the brain. These principles included cerebrine, myeline, and apparently a new phosphorized principle insoluble in strong alcohol, together with that class of substances generally termed extractive. At the same time, the brain swelled and attained a smaller specific gravity, thus, in one case, from 1036 it became 1007. Water, however, dissolved no cephaline from the brain. Alcohol seemed to have no more chemical effect on the brain than water itself, so long as its proportion to the total volume of fluid did not exceed a given extent. The limit would appear to exist somewhere near a fluid containing 35 per cent. of alcohol. But, if the percentage of alcohol exceeded this amount, then not only a larger quantity of matter was dissolved from the brain, but that matter included cephaline. Such alcoholic solutions also decreased to about the same extent as water the specific gravity of brain substance, but not from the same cause; that was to say, not merely by the loss of substance and swelling, but by the

fixation of water. Many difficulties surrounded the attempt to follow these ideas into life, and to comprehend in what way these modes of action of water and alcohol on the brain might be influenced by the other matters present in blood. From Thudichum's researches it followed that the brain must be subject to every influence affecting the blood, and it was probable that what was written above regarding the action of water on the brain was likewise true of an extraordinary watery serum in life. But, if the serum were rich in salts, those salts, by a power of combination which they had for the cerebral principles, would preserve the integrity of the latter. On the other hand, it was difficult to see how any of the matters known to exist in the blood could prevent alcohol, if present in sufficient amount, from either hardening the brain (as it did after death) or dissolving traces of the principles to be henceforth carried away in the circulation; that was to say, should physiological research confirm the stated fact that the brain in life absorbed alcohol and retained it, it would almost follow of necessity that the alcohol would act as he had indicated, and produce disease, perhaps delirium tremens.—*Brit. Med. Journ.*, Sept. 23, 1876.

10. *Action of Strychnia applied directly to the Integuments of the Nostrils in Man.*—Dr. MOLLER states that strychnia applied with a brush to the nostrils, causes an exceptional acuteness of the olfactory sense, and will restore the sense of smell to those affected with anosmia. He ascribes this phenomenon to the direct irritation produced by the application to the nervous terminations. *Revue des Sciences Médicales*, Oct., 1876, from *Ugesk. for Læger*, R. 3, Bd. 19.

11. *Bromide of Potassium as a Caustic.*—In a paper read at the recent meeting of the French Association for the Advancement of Science, M. PERRAND, of Libourne, claims for bromide of potassium certain properties hitherto but slightly recognized—properties which will extend the already wide range of the therapeutical uses of this salt. He found that subcutaneous injection in rabbits of concentrated solutions of the salt led to sloughing of the skin, and from this he was led to try the value of what he considered to be the escharotic properties of bromide of potassium upon malignant and other growths, either by means of injections into the tumour or by the application of the powdered salt to a raw surface. The action of the salt is completely resisted by the tegument. His first clinical experiment on the subject took place in April, 1874, when, by means of daily applications of powdered bromide, he effected the removal within twenty-eight days of an epitheliomatous growth on the face. He has since had equally good results from this treatment of atonic ulcers of the legs, rapid cicatrization following the separation of sloughs produced by the application. In such cases he uses either the powder or an ointment of one part in five, or a mixture (one in ten) of glycerine and the bromide. In many skin affections, as chronic eczema, pityriasis, and aene, in phagedæna, ulcerative stomatitis, and many other local inflammatory disorders, he has found it of use. As a local hæmostatic, a solution of one in fifty has served for epistaxis, and as a general hæmostatic its success in many cases of hæmoptysis and metrorrhagia was very marked, where ergot, perchloride of iron, and rhatany had failed.—*Lancet*, Sept. 30, 1876.

12. *Action of Pilocarpin on the Submaxillary Gland of the Dog.*—Mr. J. N. LANGLEY gives (*Journ. Anat. and Phys.*, October, 1876) the following results of experiments made by him in the Physiological Laboratory, Cambridge.

In small doses, *i. e.* up to 30 mgr., pilocarpin exerts an action on the gland very similar to that produced by stimulation of the chorda tympani.

It causes a rapid secretion, and a considerable increase of blood-flow; both secretion and blood-flow gradually declining.

Its effects are little if at all altered by section of the chorda tympani or of the sympathetic nerve.

Stimulation of the chorda tympani increases the pilocarpin effects, *i. e.* the nerve is functionally unaltered.

Stimulation of the sympathetic diminishes its effects, so that this nerve too is functionally unaltered.

The secretion is stopped by injecting atropin (a fact for some time known), but a quantity of atropin sufficient to paralyze the chorda tympani does *not* prevent a relatively large quantity of pilocarpin from producing its ordinary results. In fact, the secretion or absence of secretion is dependent on the relative quantity of the two poisons present, just as in the stand-still or beat of the heart.

In *larger doses*. Instead of causing a stronger saliva-flow, it causes none at all, and further prevents the chorda tympani from producing any secretion.

It considerably diminishes the blood-flow through the gland, as well as the effect of the chorda tympani on the blood-flow.

It does not, however, stop the sympathetic secretion. The action indeed is not very dissimilar to that of atropin; this agrees with its action on the vagus and inhibitory apparatus of the heart, where in large doses it prevents any inhibition of the heart from stimulation of the vagus or of the junction of the sinus venosus, just as atropin does.

13. *Second Series of Experiments on the Biliary Secretion of the Dog.*—Prof. RUTHERFORD and M. VIGNAL in their first series of experiments (see No. of this Journal for January, 1876, pp. 258-9) gave an account of the action of several articles on the biliary secretion of the dog. In this second series (*Journ. Anal. and Phys.*, October, 1876) they give the results of their experiments with several other chologogues. We give the results below of their experiments:—

1. With *Euonymin*. Five grains of this, when mixed with a small quantity of boiling water and placed in the duodenum, powerfully stimulated the liver. 2. Coincident with the marked action of the liver there was only a slight increase of intestinal secretion. Seeing that Mr. Clothier found "*euonymin*" to be an active purgative in the human subject, these experiments suggest that the purgative effect may be chiefly due to increased secretion of bile. At any rate these experiments clearly show that this substance is worthy of receiving far greater attention in practical medicine than it has done hitherto.

2. *Sanguinarin*. 1. In one experiment three grains, in another experiment one grain of "*sanguinarin*" when mixed with a small quantity of bile and water and placed in the duodenum powerfully stimulated the liver. 2. It rendered the bile more watery, nevertheless it caused the liver to secrete more biliary matter in a given time. 3. The secretion of the intestinal glands was slightly increased by these doses. These results show that the statements of Tully and Mothershead ought not to be treated with indifference and neglect, as they at present appear to be, in practical medicine.

3. *Iridin*. 1. Five grains of iridin when mixed with a little bile and water and placed in the duodenum very powerfully stimulated the liver. It is not so powerful as large doses (four grains) of "*podophyllin*," but it is more powerful than "*euonymin*," as is shown by the amount of bile secreted per kilogramme of dog; the fractions for the two "*euonymin*" experiments being 0.4789 cc. and 0.4678 cc., whereas in the "*iridin*" experiments they are 0.537 cc. and 0.638 cc. The high fraction in the second iridin experiment probably resulted from a much smaller dog getting the same dose as in the first experiment, the smaller liver being thereby stimulated to do a proportionally greater amount of work. 2. Iridin is also a decided stimulant of the intestinal glands. Judging from these experiments its irritant effects on the intestinal mucous membrane are decidedly less than those of "*podophyllin*," while the purgative effects are greater than in the case of "*euonymin*." The statement of the writer in the *Lancet* that in man "it is gentler in its action than *podophyllin*" is fully supported by these experiments, and there seems every reason why this substance should be removed from its present obscurity and placed in a prominent position in practical medicine.

1 The transient secretion ensuing immediately after injection is not here regarded as a proper effect of a strong dose, since the larger the dose the slighter and more transient it becomes.

4. *Leptandria*. 1. *Leptandria* when mixed with bile and placed in the duodenum undoubtedly stimulates the liver, but its power is very feeble as shown by the small secretion of bile per kilogramme of dog notwithstanding the large doses given. It excites the liver to secrete bile, having the ordinary composition. Unless the biliary solvent be present, "*leptandria*" produces scarcely any appreciable effect. In this respect it resembles many other resinous substances, e. g. "*podophyllin*." 2. It is a feeble stimulant of the intestinal glands.

5. *Ipecacuan*. 1. Sixty grains of powdered ipecacuan mixed with a small quantity of bile and placed in the duodenum powerfully stimulated the liver. Even three grains had an effect on a dog weighing 6.8 kilogrammes very nearly as great as the effect of sixty grains on a dog weighing 27.2 kilogrammes; the amount of bile secreted per kilogramme of dog being nearly the same in both cases. 2. The bile secreted under its influence was of normal composition as regards the biliary matter proper. 3. No purgative effect was produced, but there was an increased secretion of mucus in the small intestine. The composition of the bile did not afford any evidence of an increased secretion of mucus having taken place from the glands of the bile-ducts.

The increased biliary flow that followed ipecacuan could not in these experiments be ascribed to any relaxation of "spasm of the bile-ducts," for that no such thing existed was clearly shown by the free flow of the bile before the substance was given. Nor could it be owing to contraction of the gall-bladder, for the cystic duct was clamped. Nor can it be ascribed to contraction of the bile-ducts, for the increased flow was far too prolonged to be attributable to any such cause. It is, therefore, certain that this substance, like the others, has the power of stimulating the *secreting* apparatus of the liver. This being now proved as regards the dog, it can scarcely be doubted that the *modus operandi* is the same in man. The results of these experiments will, therefore, lend to new speculations regarding the pathology of dysentery; for *every step towards greater accuracy of knowledge regarding the modus operandi of any therapeutic agent is certainly calculated to advance our knowledge of the true nature of the pathological condition that is relieved or cured by it.*

6. *Colocynth*. 1. This is a hepatic stimulant of considerable power. It renders the bile more watery, but nevertheless increases the secretion of biliary matter. 2. It is also a powerful stimulant of the intestinal glands.

7. *Jalap*. 1. This is a hepatic stimulant of considerable power. It renders the bile more watery, but at the same time increases the secretion of biliary matter. 2. Its effect on the liver is, however, far less notable than its effects on the intestinal glands. Its hydragogue cathartic effects on these were fully manifested in these experiments.

14. *Anæsthesia by Intravenous Injection of Chloral*.—The method of producing anæsthesia by the injection of solution of chloral hydrate into the veins, first practised by M. Oré, of Bordeaux, still finds advocates, and has been employed quite recently with success. The dangers of the practice far outweigh, in our opinion, its supposed advantages, and this is the conclusion at which most experimenters have arrived. Drs. TIZZONI and FOGLIATA have undertaken a series of experiments with the view of elucidating the following questions: 1. Is chloral when injected into the blood a true anæsthetic? 2. Is the method free from great dangers? 3. What are these dangers? And 4. Upon what tissue elements does chloral act? From numerous experiments, they arrived at the following conclusions: 1. That although chloral, when injected into the veins, is a powerful hypnotic, it is not a true anæsthetic; the cutaneous sensibility ceases only when a very large dose is given, and the cornea almost never becomes entirely insensible. 2. That the process is very dangerous; for the exact dose cannot be regulated, the action is highly variable in different individuals, there is no means of moderating the action if excessive, and that it may lead to phlebitis. Add to this, that a large quantity of fluid is injected suddenly into the circulation, and may lead to ill effects, or air may be introduced. In an excessive dose, chloral produced death by its direct action on the heart, the action of which ceased in diastole. 3. Their experiments led them to be-

lieve that the poison acts directly on the muscular fibres of the heart; that when locally applied it causes contraction of these fibres, and thus produces a tetanic systole of the ventricles, but when injected into the blood or beneath the skin, or given by the mouth, it excites the "diastolic extensibility" of the muscular fibres, and thus produces a forced diastole. They add that subcutaneous injection of chloral is not more desirable, as it causes local muscular spasm, and hence absorption is slow and irregular, and that it is liable to cause gangrenous abscesses. As an antidote in poisoning by chloral they recommend the cold douche to the head and spine; and consider injections of strychnine, quinine, utropine, and enure injurious. These results will, we trust, deter English surgeons, at least, from a method of procuring anæsthesia, which is at once so gratuitously dangerous, and so doubtful in its effects.—*Lancet*, Nov. 11, 1876.

15. *Symptoms resulting from Anæsthesia by Ether in Young Subjects.*—Dr. LEON THURMER read a paper on this subject before the French Association for the Advancement of Science. He related three cases in which the administration of ether for surgical operations was attended by an arrest of respiration, and though, after long efforts at restoration recoveries took place, the patients were placed in a most alarming condition. He also instituted experiments on young cats with ether, and found, as in young human subjects, an arrest of respiration often occurred. Older animals were less liable to this accident. He, therefore, considers anæsthesia by ether in young subjects as dangerous, and that chloroform for them should be always preferred.—*Gaz. Hebdom.*, Sept. 15, 1876.

16. *On the Employment of Iron in the Treatment of Chlorosis.*—Dr. Dujardin-Beaumetz entertains some doubts as to the utility of ferruginous preparations in the treatment of chlorosis, and he gives reasons for his scepticism. Before admitting, he says, that in the work of organic reconstruction iron is superior to other medicines, we ought to see the quantity of iron which disappears from the economy as a consequence of næmia. Take for example a young girl of the weight of 60 lbs. (27 kg.). The proportion of iron in her body is rather more than 2 lbs.). According to the proportion of iron in the body, the proportion of iron would be, in relation to the weight of the whole body, represented as .00011, which would give, in the case of the girl, 5.454 of iron. But the iron is distributed in various parts, and the blood contains only .5063 of iron in 1000 parts so that the quantity of iron contained in the girl's blood would be about 2 to 2½ grammes (a gramme is about 15 grains). But this quantity does not belong exclusively to the globules, a certain part being distributed to the albumen and the fibrine, and thus the quantity reserved for the globules is diminished. These last alone undergo a more or less marked diminution in chlorosis, but the deficiency never reaches more than from a quarter to a third of the total amount of the globules, so that in admitting the numbers in the given case it is found that the diminution of iron in this disease is very small and is represented by figures varying between 10 and 50 centigrammes at the utmost. This small loss of iron is restored every day by the food. The arguments thus adduced show that the ferruginous preparations may act in chlorosis, not by replacing the iron which has disappeared, but in stimulating the digestive functions and promoting nutrition and assimilation. Dr. Dujardin-Beaumetz does not deny the beneficial effects of iron in chlorosis, but he thinks that the results have been much exaggerated, and that, in a great number of cases, hygienic measures have been superior to the iron treatment. He adduces his own experience in proof of this view, and he states that in the case of several young women in a school which he attended, and who were suffering from chloro-anæmia, the symptoms were not at all relieved or improved by iron, but were cured by the introduction of hydrotherapeia and gymnastics in the institution where the patients were being educated.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1876, from *Bull. Gén. de Therap.*, May 15, 1876.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

17. *Hemorrhagic Diathesis*.—Sir WM. JENNER read before the Clinical Society of London (Nov. 10th), an elaborate report of a case of hæmophilia, which had just terminated fatally under his care in University College Hospital, and made as the result of his extensive experience some interesting remarks on the pathology of that affection.

The case was a lad, aged thirteen, who was admitted on November 4, on account of hemorrhage from the bowel. He was known to be suffering from the hemorrhagic diathesis, having been several times in the hospital on account of severe hemorrhage from slight causes. He had also often suffered from spontaneous bleedings from the nose and mouth, and also from frequent swellings of the joints; of late, the left knee had been permanently affected. A brother of the boy also suffered from the same condition, but no other member of the family. On admission, the boy was pale and prostrate, with numerous subcutaneous ecchymoses and considerable swelling of the right thigh. The hemorrhage from the bowel, generally of dark blood, continued, in spite of an ergotin injection, and turpentine and acetate of lead by the mouth, employed before the boy was seen by Sir William Jenner, who ordered an injection of perchloride of iron into the rectum, and gallic acid to be given internally. The injection returned in ten minutes, but there was no more hemorrhage, although small stools were passed. The boy, however, became paler, weaker, and more restless, and died twenty-four hours after admission. At the post-mortem examination, blood was found in moderate quantity in each side of the heart, and the clots were firm. The lungs presented no consolidation, but many peculiar pale patches, sharply defined, a little raised, with some adjacent hyperæmia, containing air, fluid, and a little more solid than the adjacent parts. The lower part of the rectum contained a very firm clot, and all the blood had evidently come from the lower six inches, where the mucous membrane was undermined by extravasations which had broken through it. The liver and spleen were healthy. The left kidney was absent; its supra-renal body was disk-shaped. The right kidney was hypertrophied, weighed seven ounces, and presented traces of fœtal lobulation. The aorta was rather small but healthy, and the arteries and veins were also healthy in appearance. The enlargement of the right thigh was due to an enormous extravasation of blood beneath the fascia. The clot was two inches thick, and very firm. The left knee-joint was found to be full of purple blood and stringy synovia. The synovial membrane was stained an ochre-brown. The cartilages presented evidence of chronic inflammation. Sir William Jenner remarked that the case resembled, in its general features, several other cases which had come under his notice; resembled them, too, in the seats of the hemorrhage, in the character of the blood lost, and in the joint affections. The joint affections were of three kinds, and the boy suffered from the two forms which were most characteristic of the disease—spontaneous swelling, tenderness, and general puffiness of the joint, such as occurred in rheumatism; and swelling, the result of successive secretion, with hemorrhage, the result of a slight injury. In a rarer form sometimes seen in the disease, there was much simple effusion. The firmness of the clots in the heart and rectum illustrates the important fact that the blood in a case of hæmophilia, after death and during life, did not lose its power of coagulating firmly. The case lent no support to the view that the walls of the arteries were in these cases of abnormal thinness. In most of the cases Sir William Jenner had seen, the bleeding was venous, not arterial. The source of the blood, the lower part of the rectum, was a point of great practical importance, and so also was the firmness of the clot which was found—a firmness probably due to the effect of the perchloride of iron, the best local styptic in these cases. It was very doubtful whether death in this case resulted from the hemorrhage from the bowel; the extravasation into the thigh probably assisted, and the peculiar state of the lungs and bronchial tubes might have been the immediate cause of death.

The points in the pathology of this disease, which have been impressed upon him by the cases he has seen, are: 1st. That the tissues are all soft, so that they bruise easily. 2d. That the blood is rather *slow* in coagulating, but its coagulum, when formed, is as firm as in health. 3d. That blood is formed rapidly; that there is a tendency to plethora of the smaller vessels, and he had frequently observed that when the patient was looking his best is the moment when injuries have the worst effect, and spontaneous hemorrhages are the most likely to occur. With regard to the etiology, it was not always possible to trace back the disposition to the ancestors. He had seen cases in families, where the ancestry could be traced for generations, where no history of hemophilia in relations could be got; but when once developed it has often affected more than one member of the family. Sir William Jenner has known it transmitted by a daughter, who was not herself the subject of the disease. In this boy's parents, and in their relatives, no hemorrhagic tendency existed; there was instead only some disposition to phthisis. The present was, he believed, the only case in which the cause of the swelling of the joints was found to lie in effusion of blood with excess of synovia. Dr. Legg, in his treatise, was unable to find any such cause for the joint affection in any well-recorded case. In the present case there was, in addition to these changes, evidence of long-standing inflammation of the knee-joint. He had pursued for some years the following treatment of the disease, founded upon the pathological basis he had laid down: Every month, or oftener, some mercurial, followed by sulphate of soda, in order to control the tendency to plethora. The latter should also be given once every week, and both should be repeated at other times whenever the patient appeared to be fuller of blood than normal. The diet should be rather dry, with a considerable proportion of white fibrous meat, and plenty of open air exercise should be taken, with the greatest care to avoid mechanical injuries.

Mr. CHRISTOPHER HEATH said he remembered the boy as a patient under his care. The rest in the hospital did him good. It was, however, rather curious that two instances of such a rare form of malady should be in the hospital at the same time, for at the present moment under his care there was also a patient all the male members of whose family were bleeders. He had carefully traced the family history in this case, and it was reported in the *British Medical Journal* for January 11, 1868. The female members of the family did not suffer, but they transmitted the affection to their male offspring. In the case of the boy under his care there was also some local infiltration of blood, but it seemed to be more superficial than in Sir W. Jenner's case. The tendency to bleed in his patient could only be overcome by continuous irrigation with cold water. Internally he gave iron and hydrochloric acid. As a result of this tendency to bleed, all the males of the family had died out; only the females were left alive.

Mr. Howard Marsh had seen four or five such cases among children. In all, or almost all, of these the joint affection was present, but there had been no means of determining its nature. In one instance the elbow-joint had been destroyed, probably as the result of effusion. As a rule the joints resembled rheumatic joints.

The President did not think that iron given internally did much good in these cases. When relief had been afforded to the system by bleeding, almost anything would stop it. Locally matters were quite different; there he thought that iron was of the greatest value. If the bleeding came from the bowel, it was generally from the lower part of the rectum, to which the iron solution could be readily applied.

Dr. Greenhow knew of one family which had completely died out from this affection, yet there was no family history of bleeding. Two died under his cognizance; one from bleeding at the nose in whooping-cough, the other from bleeding after the removal of a tooth.

Sir W. Jenner said he had seen bleeding from the socket of a tooth promptly relieved by crystals of perchloride of iron.

After some remarks by Mr. Mahomed on the condition of the vessels,

Dr. Greenfield said he had seen plastic exudation in the bronchi in two cases where death had followed hemorrhage.

Sir William Jenner, in reply to Dr. A. P. Stewart, said that there had only been one subcutaneous injection of ergotine (four grains). He also observed that Professor Rheinkens, of Brussels, whom he had seen, and who had recommended regular bleeding to keep off the malady, had had five cases; all of these patients were now dead.—*Lancet*, Nov. 18, 1876.

18. *Phosphorus in Leucocythæmia*.—The startling results announced by Dr. Broadbent, and afterwards by Dr. Wilson Fox, as having resulted from the administration of phosphorus in well-marked cases of splenic leucocythæmia has induced other practitioners to try that treatment. At a meeting of the Clinical Society of London, Sir WILLIAM JENNER read brief notes of three cases of leucocythæmia treated by phosphorous. The cases had occurred in private practice. The first was that of a barrister seventy-one years of age, first seen by Sir William Jenner on July 31, 1875. The spleen reached two fingers'-breadth below the umbilicus, where its notch could be felt. The temperature was 100°, and the white corpuscles were extremely numerous. On November 2, the spleen reached four fingers'-breadth below the umbilicus; the white corpuscles were as numerous as before. He had been taking, in the interval, three grains of phosphorus pill three times a day, and for one week twice a day. He had lost flesh. Temperature 100°. Death took place in December. The second case was that of a lady thirty-eight years of age, who presented all the usual symptoms of splenic leukaemia. There was a large excess of white corpuscles. She also took three grains of phosphorus pill three times daily. The temperature ranged from 97.5° to 101°. She gradually got weaker, and died on July 26. The third case was that of a married lady, aged twenty-seven, who consulted Sir W. Jenner early in June. This was another marked case of splenic leucocythæmia. The morning temperature was natural; evening, 100°. The same treatment was pursued as in the other cases, except that in July, at Dr. Broadbent's suggestion, capsules containing phosphorus were substituted for the pills. There was then not much improvement. The temperature was 100°; night-sweats less profuse; but the epistaxis was more abundant, and the white corpuscles had not diminished in size. On November 8, Sir W. Jenner again saw her. She had now been taking phosphorus ($\frac{3}{8}$ gr.) in capsules since July 15. The spleen had continued to enlarge; epistaxis occurred at rare intervals, but she complained of extreme giddiness on movement. The white corpuscles were at least as numerous as the red. Sir W. Jenner explained that he had furnished these outlines of cases occurring in his practice as embodying his experience of the phosphorus treatment.—*Lancet*, Dec. 2, 1876.

19. *The Blood in Anæmia*.—Considerable attention has been paid of late to the microscopic examination of blood in various diseases. The accurate method of counting the number of blood-corpuscles after dilution with a definite quantity of serum, etc., will doubtless prove very valuable; but M. Hayem has pointed out (*Société de Biologie*, November 4) that in anæmia this is only half the inquiry. In anæmia we have to do with the altered ratio between the number of the corpuscles and what may be called the "colour-richness" of the blood—in other words, the quantity of hæmoglobin. To estimate the latter, M. Hayem has used a microscopic cell of known dimensions, alongside which he places a wafer, the tint of which is equal to that of the blood richest in corpuscles and colour. A scale is obtained, in which a given number of corpuscles corresponds to a given colour. Having given the number of corpuscles and the "colour-richness," it is easy to determine the value of each corpuscle. In the normal state this value is found pretty constant. M. Hayem does not find any marked difference in the colour-richness of the blood of the two sexes; but he finds a very marked difference between the adult and the new-born child in this respect. In the latter the real value of the corpuscles is greater than in adults. This explains why there is a smaller number of corpuscles. In chronic anæmias the real value of the blood is very inferior to that which is observed in the normal state. But in extreme anæmia the corpuscles undergo a notable hypertrophy, and in general gain in volume what they lose in number. Thus

the real value of the corpuscle tends to approach the normal state, or even go beyond it. M. Gubler stated that amongst all the cachexias he had only observed the hypertrophy of the corpuscles, with diminution in their number, in Addison's disease. To this M. Hayem replied that the above held good of all anæmias, whatever their origin, if only the anæmia were severe. It is greatly to be desired that the details of method may be explained, and these results tested by other observers.—*Med. Times and Gaz.*, Dec. 2, from *Gazette des Hôpitaux*, Nov. 4, 1876.

20. *Treatment of Acute Rheumatism by Salicin.*—Dr. T. MACLAGAN some time since (*Lancet*, March 4th and 11th, 1876) called attention to the beneficial action of salicin in acute rheumatism, and gave the result of his experience as follows: "1. We have in salicin a valuable remedy in the treatment of acute rheumatism. 2. The more acute the case, the more marked the benefit produced. 3. In acute cases, its beneficial action is generally apparent within twenty-four, always within forty-eight, hours of its administration in sufficient dose. 4. Given thus at the commencement of the attack, it seems to arrest the course of the malady as effectually as quinine cures an ague, or ipecacuanha a dysentery. 5. The relief of pain is always one of the earliest effects produced. 6. In acute cases, relief of pain and a fall of temperature generally occur simultaneously. 7. In subacute cases, the pain is sometimes decidedly relieved before the temperature begins to fall; this is especially the case when, as is frequently observed in those of nervous temperament, the pain is proportionally greater than the abnormal rise of temperature. 8. In chronic rheumatism, salicin sometimes does good where other remedies fail; but it also sometimes fails where others do good."

In the number of the same journal for Oct. 28th, he states that further experience has confirmed the accuracy of the conclusions. In not one case has he found salicin fail to produce a speedy cure of the disease. He recommends, now, however, it to be given in larger doses. Fifteen grains every three or four hours he considers a medium dose for an acute case, but it is well to give 20 or 30 grains every two hours, as the best way to gain the full and speedy benefit of the remedy is to saturate the system as quickly as possible. In very acute cases, he gives the above dose every hour until the pain is relieved. "With relief of pain, sleep returns, and the hourly dose cannot be adhered to. But it is well to give twenty grains, at least, every two hours during the day, till the temperature is down to the normal. For a week afterwards the same dose should be given four times a day.

"Salicin is an excellent bitter tonic—in my experience as good as quinine, and not apt to disagree as the latter is. I have always found cases of acute rheumatism treated by it convalesce very rapidly; treated in the old way, convalescence from that disease is a slow and tedious process."

The following are his conclusions with regard to the action of salicin on the cardiac complications of acute rheumatism:—

"1. That, given sufficiently early and in sufficient dose, salicin prevents these complications.

"2. That its free administration is the best means of staying their progress after they have occurred.

"3. That such general treatment does not exclude the usual local measures—leeching, poulticing, etc.

"4. That the beneficial action of the salicin on the heart ceases when the temperature falls to the normal.

"5. That salicin is powerless to remove the effusion which remains after the fever has ceased. (To touch the gums with mercury, slightly but quickly, I regard as the most hopeful means of attaining this end.)

"It is right that I should add that my experience of salicylic acid leads me to regard it as having much the same action as salicin, as an antipyretic and antirheumatic. All that I have said of the alkaloid I believe to be equally applicable to the acid.

"The advantage of the former is that it is an excellent bitter tonic, and

never causes troublesome symptoms; except in some rare cases such tinnitus aurium as results from a two- or three-grain dose of quinine.

"The disadvantage of the latter is, that it generally causes irritation of the throat, and frequently induces sickness; in one case I found it give rise to troublesome irritation of the bowels."

21. *Cold-Bath Treatment of Enteric Fever.*—Dr. JOHN McCOMBIE, in an article on this subject (*The Practitioner*, November, 1876), gives the following as his conclusions: "Whilst we are unable to give our assent to the opinion that cold water is omnipotent in the treatment of enteric fever, we consider it a valuable addition to the therapeutics of this disease. From the simplicity of its administration, from the absence of danger in its use in the majority of instances, and from the beneficial effect derived from the reduction of the temperature and the production of sleep, we think that it is far from having attained that position amongst the therapeutics of this disease which it deserves; but we do not hesitate to affirm that there are other agents of great, and in some cases and under certain conditions of greater value, and that the treatment of enteric fever has not yet resolved itself, as certain German authorities would have us believe, into the use of the thermometer and the cold bath."

22. *The Relation of Algae Vegetation to Malaria.*—The microscopical investigation by Dr. LANZI, of Rome, of the fauna and flora of the marshes in the Roman Campagna, and of those of the Pontine Marshes, has led to the discovery of a peculiar alteration which the algae undergo in these localities. Dark granules are found embedded in the endochrome or the chlorophyll of the algae cells; and as the algae die these granules become more and more abundant, until they completely fill the cells, and the algae no longer appear green under the microscope, but black, while at the same time they pass over into a state of putrefaction. This process, which Signor Lanzi has carefully watched in his aquaria, occurs every year on a large scale in the Roman Campagna. The swamps which form during the winter are covered in the spring with a very abundant growth of algae. In the summer, when the water dries, large surfaces of country are covered with a continuous layer of decaying algae. In the autumn they die and decay also on the surface of any water that still remains, and everywhere the microscope reveals in their *débris* the existence of the above-mentioned dark-coloured granules. According to Lanzi's view, these granules possess the properties of a ferment. They are found abundantly disseminated in the dust of the Roman Campagna, or can be freely developed out of it by cultivation. Lanzi considers that they are identical with the pigmented spherobacteria of Cohn and the *Bacteridium brunneum* of Schroeter. Now, the pigment-granules which are found in the liver and spleen of persons suffering from malarial cachexia are identical in their properties with those which develop out of decaying algae; and Lanzi strongly maintains the identity of the so-called "malaria melanine" of pathologists with the vegetable granules. He has succeeded, indeed, in growing zoöglæa-like vegetation from the pigment of malarial livers. The great carrier of these granules appears to be the wind, which disseminates them with the dust throughout the atmosphere of the Campagna district.

Signor Terrigi, who assisted Dr. Lanzi in his microscopical observations, made use of special apparatus to determine the vertical elevation above the surface of the ground which the granules can reach, and he found it to be about fifty centimetres—a height at which the wind could easily take them up. The remedial measures which Signor Lanzi suggests to subdue the malaria of the Roman Campagna consist in drawing off the water from the larger swamps, in draining wet land, in planting trees, and in adopting a system of scientific agriculture.

The *Eucalyptus globulus* appears not likely to answer the expectations which were at first formed of it, for it can only live in specially sheltered situations, and is not hardy enough to grow indifferently in any part of the Campagna.—*Med. Times and Gaz.*, Dec. 2, 1876.

23. *Nitrite of Amyl in Ague, etc.*—Surgeon W. E. SAUNDERS extols (*Indian Medical Gazette*, Nov. 1876) the efficacy of nitrite of amyl in ague, etc., in which its effects seem to have been most remarkable. He uses the "nitrite of amyl mixed with an equal part of oil of coriander, to render it less volatile, and at the same time to cover what is, to my sense of smell, a most disagreeable odour. I find it acts better in this way, owing, no doubt, to a more gradual and complete action, much less being lost during inhalation.

"It certainly is the most powerful diaphoretic I have ever seen; and I now use it in all cases of fever to produce diaphoresis, which it does, as a rule, in a few minutes."

He adds, "I do not mean to say that quinine should not be used in these cases, for there is ample proof that it tends to check the return of the attacks, and removes to some extent the septic condition of the blood induced by the malarial poison whatever its nature be; and this more especially if small doses of opium be combined with it."

"In no case did the amyl fail to remove the attack in about one-third the usual time, and in most cases the fever did not again return. The method of administration I adopt is this: Four drops of the mixture, or two of amyl, are poured on a small piece of lint, which is given into the hands of the patient, and he is told to inhale it freely. He soon becomes flushed, and his pulse and respiration are much accelerated; and when he feels warm all over the inhalation is discontinued, as the symptoms continue to increase for a short time afterwards. A profuse perspiration now sets in, which speedily ends the attack; in some cases, however, the cold stage merely passed off without any hot or sweating stage."

24. *Chloral in Infantile Convulsions.*—LÖWENSTAMM (*Medicinisch-Chirurgisches Centralblatt*, No. 35, 1876) speaks of numerous instances in which he has tested the efficacy of this drug in convulsions; and he gives one case in detail. The patient was the third child of a highly nervous woman, who had lost her first and second children from this affection at about the same age as that at which this one was attacked. At the thirteenth day, twitchings of the eyelids and of the angles of the mouth were first observed; these rapidly developed into more general convulsions, which were repeated, later, every ten minutes. The infant was first seen on the sixteenth day of life. He showed then strong twitchings of the face, trismus, clonic spasms of the limbs, spastic contractions of the thumbs, and contracted pupils; the fit terminated, at the end of five minutes, in profuse perspiration. Two grains of chloral-hydrate were given every hour. The convulsions diminished in frequency and intensity, and, on the following day, he was free from them. As the case was considered to depend upon dyspepsia, an antacid in the form of *magnesia usta* was then given, and no recurrence took place.—*London Medical Record*, November 15, 1876.

25. *First Dentition in its Causal Relation to Disease.*—Dr. LEDERER points out in this paper (*Allgemeine Wiener Medicinische Zeitung*, May 2 and 9) the slender grounds upon which many disorders of childhood are attributed to dentition. He remarks that the most powerful factor in the retardation of the teeth is rickets, and that it is precisely in rickety children that these disorders—bronchial and intestinal catarrh, laryngismus stridulus, convulsions, etc.—are most frequent. During his five years' connection with the Vienna Children's Hospital, he noted ninety-six cases of laryngismus, and of these, ninety-two were in rickety subjects. He further quotes Luzinsky as having observed 504 cases of pulmonary and intestinal affections in rachitic children who showed no sign of teeth. Dentition, moreover, gives no causal indication for treatment; the conditions are far more effectually dealt with according to general rules. The theory is therefore, useless; but it is even worse than useless, because it frequently leads mothers to defer applying for medical assistance until the case is too far gone, and it engenders in others a carelessness which is most prejudicial to the patient's welfare. Dr. Lederer, therefore, without denying its occasional importance, believes that it is rarely anything more than

an exciting cause, which, without special predisposing influence, would be powerless.—*London Med. Record*, Nov. 15, 1876.

26. *On the Use of Sulphate of Iron in Diphtheria*.—In an article in the *Gazzetta Medica delle Calabrie* for January (abstract in *Annali Universali di Medicina*, August), Dr. FERRA asserts that he has treated eighty cases of diphtheria successfully, without one death, by the local application of powdered sulphate of iron. He describes the mode of treatment in the following terms.

A brush is made of horsehair, which is cut at a distance of 3 or 4 millimetres (about .12 or .16 inch) from the handle. The brush is then dipped in very finely powdered sulphate of iron, and can be easily applied to the diphtheritic patches on the tonsils, pharynx, and velum pendulum palati, or elsewhere. Sometimes the brush is applied energetically to the diphtheritic area, until it bleeds freely; the pearly colour of the diphtheritic exudation at once disappears, and the surface becomes red, or some portions of the area may be covered with mucus, which is detached by the next application. The application is made twice daily. After the first or second, the febrile temperature is gradually lowered; the enlargement of the cervical glands is reduced and entirely disappears; and in three or four days the patients are well.—*London Med. Record*, November 15, 1876.

27. *Carbolic Spray in Bronchial Catarrh*.—Dr. MORITZ communicated to the St. Petersburg Medical Society the results of his trials of carbolic acid spray in various forms of bronchial catarrh, relating several examples of its utility. Since he had much to do with this spray he found that bronchial catarrh, to which he was formerly much subject, either ceased to appear or was soon cut short. In as small a room as possible he causes half a pound of a 2 per cent. solution of the acid to be sprayed per diem, the night being the time especially to be preferred.—*Med. Times and Gazette*, Dec. 2, from *St. Petersburg Med. Woch.*, Nov. 11, 1876.

28. *Phthisis with Rapid Contraction of a Cavity*.—Dr. THEODORE WILLIAMS read to the Clinical Society of London (Nov. 10), the sequel of a case of phthisis with rapid contraction of a cavity, which he had communicated to the Society in 1871. At that time some eminent fellows of the Society had expressed doubts as to the existence of a cavity, in spite of the physical signs narrated, but the death of the patient, in January, 1875, and post-mortem examination, cleared up all doubts. The patient, a widow, aged fifty-three, was admitted into the Brompton Hospital, in April, 1871, with a history of pleurisy of twelve years' standing, and phthisis of one year's duration. Dulness was detected over the whole left side, cavernous sounds from the first to the third rib, and ronchi and râles below, and also in the right lung. Subsequent examinations showed a gradual diminution of cavernous sounds, and in July, 1871—i. e., three months after admission—they had entirely disappeared. No marked displacement of adjacent organs was then to be found; but a few months later the heart and stomach were drawn up, the right lung drawn across the median line, and some shrinking of the side was visible. In 1872, she survived a severe attack of capillary bronchitis, but died of congestion of the right lung in 1875, the physical signs before death indicating great shrinking of the left lung. The autopsy showed an old puckered cavity, about the size of a date stone, near the apex of the left lung, underlying the portion of chest-wall where the cavernous sounds had formerly been audible. The bronchus leading to the cavity was blocked and obliterated, and the greater part of the lung was in a state of fibrosis. The right lung was drawn across the median line, and was partly emphysematous and greatly congested. The heart was drawn up, and the left chest measured an inch and a half less than the right in circumference. Dr. Williams remarked that in this case each step of the contractile process had been noted by physical signs, and the post-mortem examination thoroughly confirmed the diagnosis. The fibrosis process may have had its origin in the old attack of pleurisy, and was the means of limiting the cavities, and arresting the disease. The cavity sounds were quite distinct, and he could not understand the existence of a

cavern having been doubted. Cavities were overlooked during life, even by accomplished auscultators; but this arose either (1) from the bronchus leading into them being blocked; (2) from their being small and deep-seated; or, (3) from development of emphysema in the neighbourhood. On the other hand, consolidations should not be mistaken for cavities—the difference in the expiration note, the succussion sound, the gurgle, and examination of the sputum, being easy means of distinction. Dr. Williams remarked, in conclusion, that far more cavities were overlooked than were erroneously diagnosed.—*Lancet*, Nov. 18, 1876.

29. *Thoracic Tumour simulating Aortic Aneurism*.—Dr. FINNY (*Dublin Journal of Med. Science*, Nov. 1876), in presenting to the Pathological Society of Dublin the specimens from a case of thoracic tumour, said: The diagnosis of intra-thoracic aneurism is, at all times, a matter of great interest, and at no time a matter of ease. The present case illustrates this, and also presents a new difficulty in the diagnosis on which sufficient stress has not been heretofore laid. These specimens were taken from the body of a Frenchwoman, aged twenty-two years, who was admitted into the City of Dublin Hospital on the 6th of December last. Six weeks before her admission she had been delivered of a child in Sir Patrick Dun's Hospital, after a labour more than usually difficult. It was followed by pain in the right side of the chest; and for these pains she sought admission into the hospital. It was then found that she had pleurisy without effusion on the right side. Her chest was carefully examined; no percussion dulness was observed anywhere abnormally, but a loud systolic bruit was heard in the neighbourhood of the pericardium, towards the base of the heart, which was unaffected by change of posture. Her pulse was small and feeble, and alike in both radials.

On the 18th of December there was noticed a visible pulsation close to the left side of the sternum, in the second intercostal space. Dulness was noticed over the same region, while the beat of the heart was in its normal position. The left radial was noted as markedly smaller than the right, and the left pupil was observed to be larger than the right. Ten days later, in addition to those symptoms, she had profuse perspiration, which was confined to the left side of the face and forehead. On the 1st of January, when she came under my care, Dr. Benson suggested the possibility of the existence of thoracic aneurism, at the same time suspending his opinion for further observations, as the age of the patient, the absence of any history of syphilis, or of direct violence to the chest, or of the habit of intemperance, discountenanced such a view.

She was, on January 1, seemingly in very good health, plump and well-looking, and complained of nothing but pains occasionally in the right side of the chest. She had no cough or fever, and with the exception of the thoracic pulsation and murmur she seemed quite well. During the next three weeks she was carefully watched and examined every day by myself and some of my colleagues, and was also seen by several other medical men, on whose judgment and opinions I lay great stress. After many consultations and much hesitancy we were unanimous in coming to the conclusion that it was a case of thoracic aneurism, and our idea was that it was a case of false aneurism of the left side of the ascending portion of the arch, which had bulged forward, and was causing pulsation in the second intercostal space. The shape and position of the primary and secondary sacs was further supposed to be such that the blood was diverted from passing into the left subclavian artery; and thus the small pulsation on that side was accounted for. The points on which this diagnosis was based are those usually relied on as signs of thoracic aneurism—viz., the state of the patient's general health, the existence of an intra-thoracic tumour, and the evidences of pressure. The plump, healthy look of the patient, and the absence of all constitutional disturbances, such as cough, night-sweats, or hectic, excluded the idea of cancer, or tubercle, or of enlarged glands which might be associated with those diseases. The tumour was small but very distinct at the second intercostal space. The pulsation was diastolic or single, and was rendered visible by placing pieces of paper or the stethoscope over it; at the end of the pulsation the impulse seemed very distinctly

vibratile. It gave one the sensation of a large sac filled with a great deal of fluid, and very close to the surface of the skin.

The dulness on percussion—and this was the only point to render the diagnosis doubtful—extended over a larger area than the impulse corresponded to. It extended from the middle of the sternum, at the level of the third rib, to the left sterno-clavicular articulation, and for two inches from the end of the clavicle, and then in a straight line to the third rib. Outside these limits the chest was perfectly normal on percussion. The murmur was heard over the superior part of the pericardial region, and was intensified at the lower edge of the clavicle. Its character was loud and ringing, and it gave the idea of being caused by some large cavity. It was not heard in the carotids, or down the spine. The evidence of pressure consisted in the absence of vesicular or other breathing in the space where dulness existed, while over the whole of the left lung the respiratory murmur was more feeble than natural, and was also much less than in the right lung, where the respiratory murmur was puerile in character. Just outside the region of dulness on the left side, the inspirations and expirations were prolonged, and a sound could be heard as of air whistling through some obstruction. The idea of pressure on the bronchial tubes was, further confirmed by finding the whole of the left side comparatively less filled with air than the right side. Measurements of the chest were taken on the 1st of February, and the diagnosis was still further confirmed by finding that the left side was two inches smaller than the right at the xiphoid, and two and a half inches above the mammæ. The unilateral nature of the foregoing signs, and the absence of all fever or other constitutional disturbances following a tedious delivery, presented a group of signs and symptoms which, on the one hand, excluded the possibility of phthisis, or a cancerous tumour, and pointed on the other to the diagnosis of a rapidly growing false aneurism of the aorta. This opinion was strengthened in the further progress of the case by the very variation of the signs and symptoms, such as is known to occur in aneurismal tumours. For example, the pulsation which, on the 18th of January, was very distinctly felt and seen, was, on the 26th, much less evident, while the left radial pulsation had become much more full and distinct. On the 1st of February she had a great deal of cough, and evidences of inflammatory softening of the left lung set in. These signs were believed to be due in part to the imperfect expansion of the lungs, produced by pressure on the bronchial tube, and in part to pulmonary phthisis, which, Dr. Stokes states, is one of the commonest complications of aneurism. On the 12th of February the softening and breaking down of the lung was more evident, as over the whole of it mucro-crepitant râles could be heard. On the 18th of February spasmodic laryngeal cough set in, and continued incessantly for thirty hours, day and night. This cough was of a shrilly barking character, and the "stridor from below" (Stokes) could be heard at the fourchette of the sternum; but neither at that time, nor at any other, was there aphonia. Ten days later, long after the laryngeal symptoms had passed away, dysphagia set in, and the patient complained of obstruction in the throat, so as hardly to swallow fluids. In its turn this symptom passed away, and half an hour before her death she was able to drink freely a large quantity of claret and water. She sank with the usual symptoms of asthenia and exhaustion, and died on the 6th of March. The autopsy was made eighteen hours afterwards and was conducted by myself. On opening the abdomen we found a good example of cystic disease of the kidneys, both kidneys being well mottled with these cysts. Some of them are so large as to admit the first joint of the finger. It is probable that this cystic disease might originally have been congenital, and that after having been for some time in abeyance, afterwards became developed. I may mention that this cystic disease has not been known to be developed in adults at an earlier age than thirty years, and that Virchow and Föster, and others, believe the origin of it to be a congenital change due to obstruction of the uriniferous tubules and subsequent dilatation of them into pouches.

On opening the thorax, which by measurement after death confirmed the measurement taken before death, instead of an aneurism, which we expected to see, we found that there was dry adherent pleuritis on the right side, and a

large mass of what turned out to be thickened pleura, with a vast quantity of lymphatic glands occupying the space where dulness existed, and lying upon and between the vessels in this region. The left innominate vein shows the position of the parts. These glands are in great numbers and enlarged, and lie between the pleura and the pericardium, engaging the course of the left phrenic nerve. Higher up we found a very large gland, the size of a large nut, immediately above the pulmonary artery, and engaging the branches of the pneumogastric nerve, the recurrent laryngeal branches of the pneumogastric nerve being pushed up by it, while the pulmonary and the cardiac branches are also engaged. This other mass of glands, making a large bunch, lay on the thin edge of the lung, which was pressed to the outside. On opening the lung we found in the apex a distinct chamber lined with a pyogenic membrane, large enough to receive a small orange or large walnut, while the rest of the lung was in various stages of softening.

Examination of the heart showed the right auricle and the right ventricle perfectly healthy. The pulmonary artery was in a state of dilatation; the pulmonary valves were thickened with fibrinous deposits, but competent to prevent regurgitation, and on looking closely there was found a very small fourth valve, which fitted in between the anterior and left valves, which is perhaps the commonest deformity found in connection with the right side of the heart.

Further than this there was no evidence of organic disease of the valves except a slight steatosis of the aortic orifice. Turning to the aorta, it presents the usual appearance for the first two inches and a half; and on the junction of the transverse and descending portions we find that it is constricted or pressed upon seemingly by an enlarged gland, but is free from any atheromatous disease. Immediately beyond the orifice of the subclavian artery, just at the junction of the duct of Botalli (which is filamentous) it is constricted so as hardly to admit my little finger. By way of contrast I have brought portions of the thoracic aorta, taken, one from a small old man, and the other from a small woman, in order to show the difference between the ordinary size of these vessels and what we found in this patient.

I believe the cause of the pulsation to have been the dilated condition of the pulmonary artery conveyed through the glands; the pressure of the enlarged bronchial glands on its branches and on the aorta gave rise to the thrill and vibration, while the murmur, I believe, was produced by the roughness of the semilunar valve, and to have been intensified by the delay the blood found in passing through the pulmonary and aortic arteries. The loud ringing character of the murmur was due to the neighbouring cavity in the lung. The larynx, which I here exhibit, is perfectly healthy, and free from any disease, and thus the laryngeal cough, dyspnoea, and stridor, can only be accounted for by the pressure of the enlarged glands on the recurrent laryngeal nerve.

30. *Symptomatic Hepatic Fever from Occlusion of Hepatic Duct.*—The following remarks on this subject are abstracted from a course of lectures which M. Charcot has recently delivered at the Faculté de Médecine of Paris, on diseases of the liver, and which are characterized by the same power of observation and analysis so distinctive of the teaching of this eminent physician.

As a consequence of obstruction of the common duct, the biliary ducts in the substance of the liver become greatly dilated, and after a while suffer changes, of greater or less severity, in their walls and contents. The interlobular canals partake comparatively very little in the dilatation.

The change usually discoverable within the principal biliary passages consists in the disappearance of their cylindrical epithelium, a circumstance not found in the interlobular canals. Mostly the dilated ducts contain a viscous bile, mixed with mucous flakes and débris of columnar epithelium, and, sooner or later, biliary sand. But it happens occasionally that, while the small biliary ducts in the hepatic substance are charged with bile, the large biliary canals are filled with a mucous liquid, destitute of the least trace of pigment or of biliary acids. As a rarer condition, the ducts contain a muco-purulent fluid, and in such case the lesion may be described as one of suppurative angiocolitis.

The inflammatory lesions, however, are not confined to the ducts, but commonly extend, as a hyperplasia, to the capsule of Glisson. Now and then, they give rise to the local formation of pus in the same structure, with the consequent formation either of a large abscess or of numerous disseminated lenticular abscesses.

Another result of the obstruction of the common duct, arising from pressure of indurated tissue or of the distended biliary ducts, is arrest of the intra-hepatic circulation and stasis in the vena porta, with consequent ascites, hypertrophy of the spleen, and gastric and intestinal hemorrhage. In some cases of gastro-intestinal hemorrhage the bleeding proceeds from ulcers of the mucous membrane of the stomach. In other instances of hemorrhage, such as that from the nose, or from leech-bites, the bleeding appears referable to alterations of the blood or of the bloodvessels; and this alteration has been attributed to the solvent action of the biliary acids retained in the blood. M. Charcot, however, quotes some experiments of Vulpian to show that this explanation is inadmissible, inasmuch as the quantity of such acids when retained cannot be sufficient to produce the effects referred to. The same objection holds good to the attributing to this same cause the weakened action of heart with its results, the formation of clots in the auricle and hæmoptie infarctus in the lungs, and the occasional nervous accidents terminating life in the form of convulsions and coma.

But there is another symptomatic condition, known as "symptomatic" intermittent fever, which occurs at times, without any trace of actual hepatic colic, upon calculous obliteration of the common duct, and upon intra-hepatic biliary lithiasis, and, in fact, as a consequence of occlusion of the biliary duct from any cause, as, for instance, fibrous contraction, or pressure upon it of cancer in the head of the pancreas.

The anatomical condition most favourable to the outbreak of this fever appears to be the presence of mucus mixed with stagnant bile in the biliary passages. It is, nevertheless, true that suppurative angiocolitis may exist without the occurrence of this intermittent fever; and, on the other hand, that this fever may arise when, rightly speaking, no suppuration is found in the biliary ducts. And it is equally possible that secondary hepatic abscesses may be wanting when this fever is present. To account for such ambiguous phenomena, M. Charcot concludes that there must be present, in the dilated and inflamed ducts, a septic principle, or "pyretogenic" poison, the product of changes occurring within the biliary liquid itself.

But whatever be the exciting agent, an analysis of twenty cases shows that neither jaundice nor hepatic colic, although not infrequent, are its ordinary concomitants. The following are its phenomena: 1. The onset is sudden, commencing with a rigor, followed by heat and sweating, just as in an ordinary case of intermittent fever. Of the three stages the sweating is most prone to fail. 2. The non-febrile periods are very frequently clearly marked, and the accessions regular in their occurrence, simulating the quotidian, the tertian, or the quartan type. But to this rule many exceptions obtain. 3. M. Regnard has laid it down, though only from a single case observed, that it is a characteristic sign of this hepatic fever, distinguishing it from true fever, that the specific gravity of the urine is reduced, and that leucine and tyrosine are present. M. Charcot, however, considers that the reduction in the proportion of urea is no special feature of the fever, but a result of merely damaged hepatic function. 4. As happens with symptomatic fevers generally, the accessions of hepatic fever take place in the evening, instead of the morning, as is the rule in idiopathic fever. 5. Hepatic fever is for the most part chronic. For instance, it may endure two or three months, with intervals, in which no accessions occur, of eight, ten, or fifteen days. 6. A favourable issue is possible—M. Henoch has reported one instance.

This hepatic intermittent fever is separable from a form of fever coming on at times in the course of hepatic colic. Both alike are probably due to a similar pathogenetic cause—a septic matter derived from altered bile. The hepatalgic fever may be presumed to be set up from the passage of the gallstone, which may either lacerate the mucous membrane of the biliary duct, or

otherwise so increase the pressure in its interior as to facilitate absorption of the septic material. Or, again, the passage of the calculus may set up acute inflammation, the products of which may mingle with the bile and bring about, after the manner of a ferment, a very rapid alteration of its constitution. In support of this hypothesis it may be urged that the hepatulgid rigors scarcely ever happen except in case of patients a long time exposed to inflammatory lesion of the biliary duct; a condition of things favourable to the formation of a morbid material. Further, the rigor is sometimes the prelude to a series of febrile paroxysms, of greater or less regularity, but not without the recurrence of hepatic colic; and this phenomenon supports the second clause of the hypothesis. Of the intermissions of hepatic fever no explanation is at hand.

In the same lecture, M. Chareot proceeds to point out the intimate analogy between the phenomena of hepatic fever and those of "urethral" or "uro-septic" fever, as seen in persons suffering with retention of urine consequent upon bladder and prostatic disease, and he takes occasion to describe the morbid renal condition known as "surgical kidney."—*Brit. and For. Med.-Chir. Rev.*, Oct. 1876, from *Le Progrès Medical*, Aug. 1876.

31. *Primary Cancer of the Spleen.*—Of this pathological rarity there are few unequivocal cases on record, but among them any, perhaps, be classed, one that was brought before the Société Anatomique in its April session, and recorded in *Le Progrès Médical* for the 2d instant. The subject of the disease was a male, fifty-one years of age, admitted into La Charité, under the care of M. Woillez, with a history and some of the symptoms of cancer of the stomach. After death, however, the stomach and the whole intestinal tract were found to be healthy; but the spleen and lumbar glands were extensively diseased. The former organ measured eight inches in each direction, was of firm consistency, and smooth surface; but on section it was found to be pervaded with firm yellowish-white nodules of cancer, which together far exceeded the amount of parenchyma remaining. Some of the nodules were breaking down in the centre. The lumbar glands were also infiltrated, and formed a lobulated mass around the abdominal aorta. The liver contained a few milary nodules, and was adherent to the diaphragm, whilst a solitary cancerous nodule was present on the corresponding pleural layer. Other secondary growths were found in the sternum, ribs, and vertebræ. The authors of the communication—M.M. ARRE and MOUTARD-MARTIN—while acknowledging the rarity of primary splenic cancer, point out that the disease was more advanced in the spleen than in the lumbar glands—the only other place in which it could be considered to have arisen; and they particularly insist upon the absolute freedom of the stomach and rectum from the disease. No mention is made, however, of the microscopical characters of the growth; an omission of considerable importance, since it is highly probable that it was of the nature of lymphadenoma, in which case the extensive implication of the spleen, as contrasted with the liver, and its association with the tumours, would not be so rare an event as the authors would have us believe.—*Lancet*, September 23, 1876.

32. *Peritonitis in Children.*—Dr. KEASCH, of Prague, in commenting (Betz's *Memorabilien*, vol. xxi. Heft 2) upon the difficulty of determining the presence of peritonitis in children, concludes that the character of the breathing furnishes an almost pathognomonic symptom. Every deep inspiration produces pain in the hypochondria, and the breathing is therefore shallow and frequent, and is of the thoracic type. There is no impediment to expiration, and consequently the child can still cry vigorously. The characteristic breathing, then, consists of a long expiration followed by a series of extremely short inspirations, and, as a rule, each expiration is accompanied by a cry of the same duration. If this symptom be associated with a drawing up of the limbs, the diagnosis may be considered certain. The prognosis is more favourable than in adults, at least as regards life; but when it occurs in girls between the ages of five and eight, the author believes that it is an important factor in the production of subsequent sterility; indeed, all the cases that he has

known have had this result. Ten cases which were attacked between the ages of five and fourteen years, have been watched by the author. All have now been married some years, and all are childless. In the treatment of peritonitis in childhood, if the ordinary measures fail to reduce the quantity of fluid, Dr. Kersch employs puncture; if the fluid do not escape readily, he keeps the wound open for some days, or, should this heal prematurely, he makes a second puncture through the scar of the first one.

Two cases are appended. One of these, a girl, aged five and a half years, had been much neglected, and when seen was in a condition bordering on collapse. The ordinary means were tried for a short time, but without effect. Puncture was then resorted to, and was performed in all three times. At the end of two months the child was quite strong and healthy. The other patient, a girl, at fourteen, recovered without puncture. She was treated with large doses of quinine, morphia in weak solution, and cold compresses to the abdomen. She is now twenty-four years old, and has been married six years, but has no children. The author believes the barrenness to be due to the contraction of a layer of lymph which has been deposited upon the ovaries, and the consequent interference with the nutrition of these organs.—*London Med. Record*, Oct. 16, 1876.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

33. *The Open Treatment of Wounds*.—Dr. BUROW, of Königsberg, reports (*Archiv f. Klin. Chirurg.*, xx. 1, 1876) the results of 123 operations performed by his father and himself during a period of nineteen years, and treated by the open method. The following are the figures given. There were 123 cases, with nine deaths, *i. e.*, $7\frac{1}{3}$ per cent., comprising thirty-three amputations of the thigh with six deaths, or 18 per cent.; twenty-four amputations of the leg with three deaths, or 12 per cent.; and twenty-five amputations of the arm, twenty-nine of the forearm, nine of the foot, and two of the hand without any fatal case. These figures furnish a most interesting comparison with those compiled by Paul, Malgaigne, Ashhurst, and others, more especially Krönlein, Volkmann, and Thiersch. Dr. B. supports with sound arguments the character of his statistics, while acknowledging that the figures are small. He gives, in brief, the following as the essentials of the system he follows. In a case of amputation of the breast, he carefully checks the bleeding by the use of silk ligatures, which he cuts off short. The wound is then left absolutely open, being protected from dust and flies by a simple oiled cloth. No sutures or plasters are used. When the first oiled cloth is loosened by suppuration, a second is applied dressed with a simple ointment. When granulations spring up luxuriantly, the cloth is wet with a solution of acetate of alumina. This is the whole treatment. After amputations of limbs, he first ligates the larger vessels before loosening the Esmarch's tube, completing the ligations after removing it. The wound is then left open for half an hour, with the double object of guarding against secondary hemorrhage and of allowing the surface of the wound to ooze with a serous fluid. Then he puts in three sutures, securing them with a loop and not a knot, so as to allow for swelling of the tissues. Two or three strips of plaster are placed between the sutures, and the lower angle of the wound is left wide open for the free escape of discharges. Then by position of the limb and careful watching, it is made sure that the secretions can escape freely. He does a flap operation, insists on the greatest cleanliness on all hands, and never uses sponges a second time.—*Medical Record*, Dec. 16, 1876.

34. *Sulphite of Soda as a Dressing*.—Dr. MIXXICH, of the Venice Hospital, prefers the employment of the sulphite of soda to carbolic or salicylic acid, not

only as a dressing for wounds, but also in erysipelas. It is much less inconvenient to use, and much cheaper. He applies it in the same way as Prof. Lister does the carbolic acid, and the solution employed consists of one part of the sulphite and one of glycerine to nine parts of water. Its beneficial effects have been proved in a great number of cases.—*Med. Times and Gaz.*, Sept. 23, from *Gaz. des Hôp.*, Sept. 7.

35. *New Method of Wound-drainage.*—Mr. CHENE describes (*Ed. Med. Journ.*, September, 1876) a new system of drainage of wounds which consists in the substitution of hanks of catgut prepared in carbolic acid solution for the India-rubber drainage-tubes. The number of threads in each skein must depend on the size and importance of the wound. "In a large wound," he says, "as far as I am at present able to judge, eight or sixteen threads should be sufficient in each skein; the number of the skeins depending on the shape and size of the wound. In cases in which very profuse discharge is expected, either in a specially large wound or after a tedious operation, in which the wounded surface is necessarily exposed for a considerable time to the irritation of the carbolic spray, it will be better to increase the number of separate skeins, stitching them to different parts of the wounded surfaces in order to keep them in position, than to depend on one or two thick skeins. I am led to form this opinion from the result in the case of excision of the knee. If it is ever necessary to use a skein of more than sixteen threads, one thread of catgut prepared in chromic acid should be added to act as a drain, if required, during the absorption and molecular disintegration of the drain. Chromic-acid gut should also be used to stitch the drain in position when such a procedure is necessary.

"As regards the thickness of gut, I have used three thicknesses. The finer the gut the more numerous and the smaller will be the capillary tubes between the threads. The fineness of the gut will not interfere with the capillary action through the threads. For these reasons, I am of opinion that the finest gut should be used; by its use, the better will be the drain for any given thickness of skein.

"It may be a question how much of the action is due to capillarity through and between the threads, and how much to the drain acting as a lead to the discharges. Capillarity has, I believe, the chief place.

"I have hitherto used the gut prepared in the usual way by soaking in carbolic oil. Simple soaking of the drain in carbolic lotion for a quarter of an hour before using will be sufficient in cases in which prepared gut is not at hand.

"As long as the drain is acting, there will be a current of fluid along and around the threads (as well as in them), separating them from the living tissue, by means of which the process of absorption mainly takes place. When the flow ceases, then absorption of the column of fluid will first take place, the living walls of the canal will then reach the threads, and absorption will then commence. If this is a true explanation of what happens, then it is evident that it will not be necessary to use catgut specially prepared (as Mr. Lister, for instance, has shown by chromic acid) in order to delay absorption.

"Further experiment may show that, in many wounds, all that will be necessary will be to bring the catgut ligatures out at the corners of the wound instead of cutting them short. This was my first idea; but I have been so satisfied with the skein, that I have not yet made trial of it.

"I make no allusion in this paper to the use of catgut in draining suppurating wounds, or in wounds not treated antiseptically.

"I beg to recommend, as worthy of the notice of the profession, the principle of drainage by utilizing capillary forces through the skeins of an absorbable material like catgut, if, by its use, the evils of the drainage-tube, already referred to, are got rid of.

"We may now anticipate a time when, with catgut stitches instead of silk, horsehair, or silver wire, catgut-drains instead of India-rubber tubing, and chromic-acid gut fixing together the buttons instead of silver wire, it will not be necessary to uncover our wounds from first to last during healing, when the

deep dressing need never be shifted, and when the outer dressing will only require to be removed when soaked with discharge. The amount of discharge, in its turn, will be reduced to a minimum by the use of an absorbable animal material like catgut instead of non-absorbable foreign bodies like silk, silver wire, and India-rubber."

36. *Scalds by Steam*.—Inspector-General SMART gives (*Brit. Med. Journ.*, Sept. 23, and *Lancet* of same date) a very interesting account of the cases of scald which recently occurred on board the *Thunderer* by an explosion of the steam boiler. Out of thirty-four vigorous men who were in the stokeholes, only two remain alive, and, in addition to these, eleven have since perished who were not so near to the exploded boiler. In all about eighty persons were involved, of whom forty-five have perished by an explosion of steam and hot water that burst the boiler with the force of a thirty-five ton gun, scattering huge masses of iron, tons of boiling water and volumes of steam, together with dense fumes from the extinguished fires. After an hour the living, fifty-eight in number, followed by nineteen corpses, reached Haslar Hospital. Of the latter fifteen had been brought up dead from the stokehole, and four had expired in the passage to the shore. Of the living, the majority were very severely scalded, but only one had received mutilation—of an ankle-joint, dying in four hours. Within thirty hours eleven others had succumbed to primary shock. Some of them were semi-comatose and little sensible to pain, others, after attempts to rally, became delirious, rolling heavily from side to side, and suffering from strangury, and stripping the dressings from their flayed limbs; breathing heavily, and vomiting. Those who survived the shock felt relief from seorching agony in thirty-six to forty-eight hours, gaining fitful sleep, passed excretions, and some asking for animal food. Possibly steam-scalding of fauces and of primary air-tubes, in those who died of the so-called shock within thirty hours, was the lesion of most fatal import. The stage of reaction for suppurative effort was attended by internal congestions and inflammatory action in the brain and along the gastro-enteric track, with their characteristic symptoms. Under such conditions six perished on the fifth, sixth, eighth, and ninth days from injury. On the tenth day there remained alive forty-four, of whom twelve have died, twenty-seven have been discharged, and five remain under treatment (September 12th).

One of these last cases, J. D——, was severely scalded by steam over the head, face, and neck, in the air-passages, and over the arms and hands. He had been exposed to the first rush of steam up through the casing of the funnel, and 350 square inches of his surface had been denuded of its cuticle or covered with large vesications. On the sixth day all his unsealed surface was of a lurid red colour. He then became delirious, and had frequent fits of moaning, which lasted till the eleventh day, when he again answered coherently; but from the fifteenth to the twentieth he was again delirious, yet after that he recollected for the first time that he had been on board the *Thunderer*. In the mean time he had severe ophthalmia that had ulcerated both corneæ, the left irrecoverably. On the twenty-second day he complained of dysphagia, when the fauces were found sloughy and aphthous, and at the end of the fourth week gastro-enteritis afflicted him till the thirty-second day. On the fortieth day the kidneys were excreting bile pigment, sp. gr. 1046, which state gave way to deposits of urates, phosphates, and, later, oxalates. He is now convalescent with, however, left staphyloma and a few cicatricial contractions.

In another case that is recovering, the patient was scalded by steam to the extent of 400 square inches. He has had no signs of meningitis, but from the suppurative stage he has had attacks of gastric irritation, and that also of the kidneys, to the extent of excretion of albumen with broken blood-disks.

Such have been the two worst of the cases that have barely evaded the dangers which others have, only less in degree, gone through. In all, the results of nervous shock are well-marked in lowered courage and in dread of the past, from which time alone can restore them.

Sloughing of the deeper integuments has been rare compared with that in gunpowder burns, wherein delirium is of earlier access. On the other hand,

early deaths from shock have been more frequent than in those burns, which may be attributed to the greater surface involved causing nervous depression, from which the reparative powers could not rally.

A scientific observer who had been witness of the results in two great magazine explosions remarked to me that 80 square inches of inflamed surface induced fever with danger to life. To test this assertion, I set a painstaking officer, Dr. Burke, to make approximate measurements of the scalded surfaces in twelve cases remaining in the seventh week. He found it, in square inches, to have been 198, 213, 232, 265, 283, 345, 355, 363, 377, 398, 477, and 766, giving an average of 356 square inches exoriated or vesicated. Of these the men now under treatment gave 198, 355, 363, 398, 477. All these had two points in common—the severity of the scald on the face and head, and sloughs, leaving indolent ulcers on the arms, in which the new cuticle was very thin. The lowest, 198 square inches, was in the oldest man injured, aged fifty-three, who had a heavy struggle through the febrile reaction. The figures 355 belonged to the extremely dangerous case of J. D—, already detailed. The highest, 766 square inches, is altogether exceptional, as he could not have survived had the whole of that surface suppurated, much of it drying under the vesications. In him the scald was over nearly one third of his surface. He is one of the two remaining who were in the stockhole, and he escaped into a coal-bunker, from which he was drawn insensible.

The questions of viability as dependent on the extent of surface involved, which determines the degree of shock, and again on the depth of tissue injured as taxing the reparative powers, are worthy of more precise observation. Perhaps in those who did not survive primary shock, the scald of the respiratory track, as well as that of the skin, precluded rallying; while in those who fell later, the depth, more than superficial extent, proved fatal, which may explain also a higher mortality from the sequences in gunpowder explosions than in severe scalds not directly fatal. I would view 350 square inches, the mean of these measurements of scalds, and 250 square inches of surface burnt by gunpowder, as equally fatal injuries.

As to the treatment. Until decided signs of rallying, it was by stimulants, with sago and beef-tea, anodynes of opium and chloral hydrate, chloroform to allay irritation of the stomach, and the use of the catheter. After rallying, beef-tea and animal food, where appropriate, were given night and day. Lime-water with milk was given to allay irritability of the stomach. On and after the third day, laxatives were given when required to relieve constipation, which was a most suspicious sign throughout, as animal food was then well borne, and the healing process went on rapidly. In treating internal complications, general therapeutics were observed. In those of the air passages there were favourable results in the congestive stage, and pneumonia developed only in two cases both fatal. The meningitic symptoms were beyond special treatment and yet two such recovered, and several also in which delirium had been present. Gastro-enteritic symptoms ran high, but subsided more readily than the meningitic with the establishment of suppuration, but there were instances of recurrence at a later stage, in which one died with coffee-ground vomit. The renal disturbance was generally checked by alkalies and nitric ether. Great nervous prostration caused anxiety as leading to syncope, which was the mode of death in more than one instance in the suppurative stage.

The local treatment was by oil and lime-water on cotton-wadding on every part to the fourth and fifth days, and later, in the majority, on the limbs. This being found inconvenient on the face, head, and neck, it was changed for a wash over with carbolic oil (1 to 10), then dusting on it from a common flour-dredger a powder, consisting of one of oxide of zinc, one of magnesia, and two of powdered starch, sifted on wherever moisture appeared, care being taken to keep free the facial orifices. It formed a mask to the features, excluding the atmosphere. Under its protection the process of "scabbing" went on favourably, and, the crusts detaching, the scalds were found healed, except sometimes on the pinna of the ear, where abscesses gave trouble. In one case only is there any permanent deformity by cicatrices on the face, so that I think it applicable also in confluent smallpox. It was used on some sores on the limbs,

the forearms and hands with success. Although only a mode of excluding atmospheric air, yet its claim is for simplicity and readiness of application. The treatment by oil and lime-water was in general disused before the tenth day; and when the above was not employed, it was substituted by a liniment of carbolic acid and olive oil (1 to 20) on lint under oil-silk, retained by bands of Lister's gauze, which although locally successful was not found free from a suspicion of irritating the kidneys.

To maintain the highest possible degree of atmospheric purity, almost every known deodorant was used; but preference was given to the process of Dr. Goolden, of disengaging chlorine, insensibly, from a mixture of nitrate of lead and common salt in solution, sprinkled on the floors from watering-pots, and on sheets hung round the offensive beds.

37. *Ranula treated by Injection of Chloride of Zinc.*—Prof. PANAS has repeatedly met with marked success from this method of treatment, employing from three or four to seven or eight drops of a solution of from one-tenth to one-fifth in strength. One very remarkable case recently occurred, in which excision, suture, drainage, etc., had in vain been tried, the liquid always reaccumulating; so that at last punctures were only made from time to time in order to ward off dangerous paroxysms of suffocation. Eight or ten drops of the solution (one-tenth) were injected without drawing off the contents of the cyst, and this after a while was repeated with a solution of one-fifth. The cure was very rapid, for in less than five weeks after the commencement of the treatment it was complete. The method is applicable to all kinds of mucous or serous cysts, for which Dr. Panas has made it a general means of treatment since his first case occurred, now two years ago. This was a case of subhyoidian cyst which had resisted cauterization and iodine injections, but yielded to a single injection of the chloride made without removing the contents of the cyst.—*Med. Times and Gaz.*, Sept. 23, from *Rév. Méd.*, Aug. 21.

38. *Gastrotomy for Stricture of Œsophagus.*—The medical journals of Paris (*L'Union Médicale*, Oct. 26; *Gazette Hebdom.*, 27th Oct., and *Le Mouvement Médical*, 28th Oct.), contain reports of a most interesting case of gastrotomy recently performed by M. VERNEUIL, and an account of which was communicated by him to the *Académie de Médecine* (Oct. 24). From these we compile the following particulars. Gastrotomy, first performed by M. Sedillot in 1849, has now been practised 16 times without success, but in all these cases the patients were already weakened by anæmia or cachexia. M. V.'s patient was in excellent general health, and consequently a favourable subject for the operation.

The patient was a lad seventeen years of age, who, on the 5th of February, swallowed by accident a solution of caustic potash. He immediately experienced a sensation of intense burning in the throat followed by fever and exfoliation of the mucous membrane of the pharynx and œsophagus. These symptoms abated, but after fifteen days he had great difficulty in swallowing. The dysphagia increased, and on the 31st of March the patient was admitted into La Pitié Hospital under the care of M. Dumontpellier. Attempts at catheterism were repeatedly made without success, and on the 24th of May he was transferred to the service of M. Verneuil. At this time he was much emaciated, his face pale and worn, temperature and pulse below normal. He was unable to swallow anything, all food being returned as soon as taken; death from starvation seemed imminent. Catheterism showed the existence of a very tight stricture, about seven inches from the upper extremity of the gullet, so low as to preclude the idea of œsophagotomy. After some hesitation and repeated failures to introduce instruments through the œsophagus while the patient was under the influence of chloral, M. V., after consultation with M. Leon Labbé, decided to perform gastrotomy. Chloroform was administered, and full antiseptic precautions were taken during the operation, which was performed as follows: An incision was made in the abdominal wall parallel to the margin of the ribs on the left side, about two inches long. The skin, subcutaneous tissue, and the great oblique muscle were then divided, and the peritoneum exposed,

which was raised by forceps and opened with scissors. The stomach, which was recognized by its white colour, was drawn into the wound with forceps and two long acupuncture needles were passed perpendicular to the lips of the incision, so as to maintain the parietes of the stomach in contact with the edges of the incision. The margins of the incision into the peritoneum were seized with several hemostatic forceps. The portion of stomach exposed was then carefully stitched to the lips of the wound, in the abdominal walls and peritoneum by fourteen metallic sutures. The two acupuncture needles were then withdrawn and the stomach laid open. The parietes of this viscus, which since the application of the sutures had become intensely congested and of a violet red, was thickened and resembled nothing seen in the cadaver. A large sound of red caoutchouc was next passed into the stomach to the extent of about three inches, and secured by a silver wire, which traversed it and the walls of the organ. There was considerable hemorrhage from the incision in the stomach which was suppressed by the hemostatic forceps. Afterwards the whole abdomen was covered with collodion and the patient removed to bed. He made a good recovery, and was almost at once able to receive into his stomach liquid food.

The progress of the case was attended by few vicissitudes. The patient was able to get up on August 20th, and by September 10th he could assist the nurses in the wards, having gradually recovered all the strength and energy which he had before the accident. The first sound was exchanged for one of an enormous size, which always remains within the fistular aperture. This fistula is rounded, and bordered throughout its circumference by a small projection, formed of the red and smooth gastric mucous membrane. The patient injects through the sound thickened soups, hashes, *potages*, and drinks, having no other sensations at the time than those of heat and cold, and not finding one thing better than another, although after making the injections he often finds his mouth filled with saliva. He can, however, swallow none of this, and is obliged to expel it by the mouth. This privation of saliva and his peculiar mode of alimentation do not, however, seem to inconvenience the patient, if we may judge by his good state of health, and especially by his increase in weight. A month after the operation, this, which had fallen to thirty-three kilogrammes, rose to thirty-four (75 lbs.), and at the present time it has reached forty-two (92 lbs.). Last Tuesday he was to be present at the Academy, and take one of his meals in their presence. For these he has a very good appetite, and it is a curious circumstance that while they are being introduced into the stomach he executes masticatory movements.

39. *Treatment of Spasmodic Stricture of the Œsophagus.*—Dr. MORELL MACKENZIE, in an interesting lecture on spasmodic stricture of the œsophagus (*Medical Times and Gazette*, Oct. 21, 1876), makes the following remarks on the treatment:—

Whenever the cause, whether of constitutional or local origin, can be discovered, it should be removed. All reflex sources of irritation—especially those connected with the gastro-intestinal and uterine systems—should be most carefully sought out, and, if possible, got rid of. The nervous system must be braced up by moral, as well as by hygienic and medicinal agencies. It must not be forgotten that the hysterical disposition prevails in by far the largest number of cases. The mind should, if possible, be kept employed by regular and interesting occupation, or by change of scene and travel. Certain nervine tonics are specially valuable, such as the valerianate of zinc. I generally give it in combination with assafoetida, but it acts very well alone.

The dietary in these cases is of the greatest importance. If the spasm is very severe, thickened liquids should be given, and it is well to bear in mind that warm drinks are much less apt to bring on spasm than cold ones, and in nine cases out of ten if the drink is sweetened it is better borne. Many patients discover these circumstances without medical advice. Gradually the

food may be thickened, and panada¹ may be allowed. If the case progresses favourably, the patient will be able to return by degrees to ordinary diet. Stimulants should not, as a rule, be allowed, and all *piquant* food should be prohibited. It is the greatest mistake to force these patients to take solid food. They may sometimes be tricked out of their malady when it is slight and recent, but rough measures always fail.

As regards local treatment, much can be done with the continuous current. The electrode should be introduced into the œsophagus at least once a day, and kept in position as long as the patient can bear it. I generally use a ten or twelve-celled battery. The application should be made soon after a meal, so that a considerable time may elapse between the treatment and the next time of deglutition. The muscles should also be galvanized externally. This treatment generally requires to be continued for some weeks or months. Sometimes great benefit, and indeed a complete cure, may be obtained by passing bougies. It is best to use an instrument with a metallic or ivory knob, and, if possible, to keep the extremity of the instrument opposite the seat of spasm. This treatment affords relief in the same way that passing a sound sometimes relieves irritability of the neck of the bladder. I have never obtained any satisfactory results from the application of stimulating or astringent solutions to the œsophageal mucous membrane. It has already been pointed out how easily those cases dependent on flatulent dyspepsia can be cured. It must not, however, be forgotten that in a large number of instances the dysphagia is a mere fancy, there being, in fact, no spasm. By passing a bougie and assuring the patient that there is no obstruction, such persons may sometimes become aware of the groundlessness of their sensations, but they are often more difficult to cure than true spasm.

40. *Supra-pubic Cystotomy performed by Incising the Anterior Parietes of the Bladder on the Calculus.*—M. A. AMUSSAT records (*Le Courier Médical*) an interesting case of this. The subject of it was a boy four and a half years of age, whom he was requested to examine by Dr. Costilhes, under the belief that the patient was suffering from calculus. On the 3d April, 1874, the patient was chloroformed, and a careful examination made, but without detecting any calculus. Subsequently the patient was examined by another surgeon, with the same negative result. The symptoms of calculus continuing, at the request of Dr. C. a second examination was made on the 2d February, 1876, by M. Amussat, when the existence of a large calculus was ascertained. On the 20th of the same month, the patient was thoroughly chloroformed; the bladder sufficiently distended with tepid water, when M. A. made an incision over the linea alba and above the pubes, about five centimetres long; he then made a small opening near the pubis, which he afterwards extended to four centimetres by the use of the hernia bistoury of Dr. Palamidessi. An examination then of the anterior parietes of the bladder by the touch, and an exploration by the rectum of the base of the bladder failed to detect the stone. M. A. then introduced a child's lithoclast, and by opening it to its greatest extent he was enabled to grasp the stone about a centimetre below the umbilicus. During these manœuvres the abdominal muscles contracted violently, expelling the contents of the bladder and some fecal matter from the rectum. Not wishing to open the abdomen over the calculus, M. A., by careful manipulation, but with difficulty, succeeded in dislodging the stone and drawing it down opposite to the anterior parietes of the bladder and beneath the incision. He then confided the lithoclast to an assistant to hold it in position while Dr. Costilhes, pressing on the abdomen with his hand above the calculus, kept it steady. M. A. then placed his forefinger on the anterior of the organ in contact with the lower portion of the stone, and with his nail as a guide he made an incision

¹ Panada is generally made of chicken or some white meat, but mutton and beef may be employed. The essence of the meat should first be extracted, and the residue reduced to the finest pulp. The whole should then be mixed together, and passed through a fine sieve. It should then be heated, and in the case of invalids should be served with fresh gravy.

into the bladder, without implicating the peritoneum, of more than two centimetres in extent, which allowed him to touch directly the calculus with his finger. Taking, then, the lithoclast in his right hand, his finger continuing to be applied to the calculus, he drew down the latter, and thus penetrated into the bladder. The instrument was then withdrawn, and an attempt made to seize the lower end of the calculus, but owing to the violent contractions of the bladder did not succeed in extracting it until after persevering efforts, and after seizing the end of the stone with small forceps, and with the aid of the bent forefinger.

The operation finished, it became important to secure a passage for the urine through an elastic catheter introduced through the wound. But M. A. had been compelled, in order to extract the calculus, to withdraw his left forefinger, and to seek anew for the opening in the bladder would incur the risk of injuring the parts, and might result in effusion of urine and abscess. After reflection, M. A. adopted the following plan: He introduced through the urethra a small metallic sound, much curved, and passed its beak out through the abdominal opening; he then slid a gum catheter opened at both ends over the sound as far as the bladder, and the metallic sound was then withdrawn. The edges of the wound were united by four twisted sutures; the catheter was fixed by a thread to the nearest pin, and its free extremity inserted into a glass bottle, and the patient put to bed.

This long and difficult operation, in which 100 grammes of chloroform was given, was followed for two days by prostration and loss of appetite, but the traumatic fever was not very high.

On the 25th February (fifth day) the pulse was 120, the appetite returned, and a substantial diet allowed. The sound having been removed on the evening of the fourth day, the urine flowed freely from the wound. The progress of cure, with the exception of some redness about the sutures and ulceration around the needles, progressed favourably. On the 9th March the urine began to flow from the urethra. On the 24th March the wound had completely cicatrized, and the urine flowed entirely by the urethra. By the 14th of April the patient was perfectly cured.

Fig. 1.

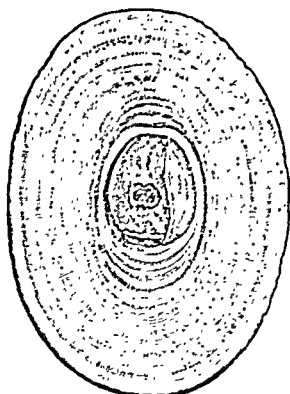
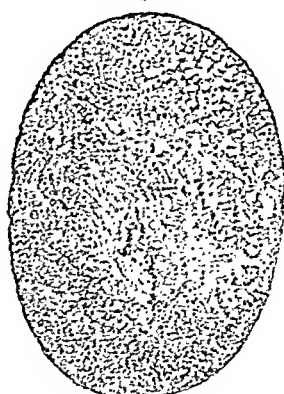


Fig. 2.



The accompanying figures (for the opportunity of laying which before our readers we are indebted to the courtesy of M. Amussat) represent the size, form, and external appearance of the calculus, and the appearance also of a section. The calculus was very hard, weighed 45 grammes, was 2½ centimetres thick, and was composed of urate of ammonia.

M. A. thinks that the calculus was developed in the urachus, and had become fixed there, and he refers to a case operated on by Franco (*Traité très Ample des Hernies*, 1561, p. 139), which he thinks was of the same character.

M. Amussat also relates two other cases of urinary calculi in old men, in

which he performed the supra-pubic operation, incising the bladder on the calculus, and finally refers to some cases of supra-pubic cystotomy, in which his father had operated in a similar manner.

41. *Effects of the entry of Air into the Veins.*—M. COUTY, of Val de Grace, discusses in succession the various theories that have been proposed—cerebral, cardiac, and pulmonary—to account for the phenomena observed, and shows that none of them are quite satisfactory. He has made numerous experiments on dogs under various conditions—healthy, curarized, uninjured, and with the chest laid open, so that the movements of the heart might be examined and tracings taken. The results at which he has arrived are that air in the veins proves fatal through the circulatory system; it first diminishes and then suppresses the aortic wave and the arterial tension. Death is preceded by four periods, the rapidity of succession of which varies. First period: The arterial tension diminishes some centimetres, but this diminution is compatible with the exercise of the greater functions. Second period: The tension falls from four to eight centimetres, and disturbances arise from cerebral anæmia, acceleration of the respiratory movements, then further fall, loss of consciousness, etc. Third period: The arterial tension sinks almost to zero; symptoms of medullary anæmia appear, with contractions of the striated muscles, involuntary evacuations, and diminution in the frequency of the respiration. Fourth period: Complete arrest of the circulation; the nerve centres die, the respiration ceases, and the right and left heart, the contractions of which are accelerated and energetic for the first three periods, are soon after arrested. But the arrest of the circulation may be very incomplete, and the disturbance from the entrance of air transitory, and then the general disturbances may be slight, or not perceptible, or they may only extend to the second or third period. But how does air in the veins arrest the circulation? M. Couty replies, by distending the right cavities of the heart. In them it accumulates and gradually produces asystolia, rendering the contraction of the right heart incomplete, and occasioning insufficiency of the tricuspid valve. The dilatation of the right side is so great as to double or treble the size of the cavity. The venous pulse is very strongly marked, even as far as to the crural vein, and air is projected throughout the venous system, appearing in the sinuses of the dura mater. Lastly, the heart contracts on an elastic fluid, and compresses instead of propelling it. M. Couty's view, therefore, is, shortly, distension, consequent on which is asystolia, and, finally, diminution or suppression of the pulmonary wave.—*Lancet*, Sept. 30, 1876.

42. *A Form of Chronic Inflammation of Bones (Osteitis Deformans).*—Sir JAMES PAGET communicated to the Royal Medical and Chirurgical Society (Nov. 14), a paper on this subject. He first gives a detailed account of a case which had been for many years under his observation, briefly noticed two other cases he had seen and referred to one recorded by Dr. Wilks in the *Path. Trans.*, vol. xx. and of another under the care of Mr. Bryant in Guy's Hospital.

Sir James Paget stated he had been unable to find recorded cases precisely similar to these, and he considered the following to be the chief characters of the affection: It begins in middle age or later, is very slow in progress, may continue for many years without influence on general health, and give no other troubles than those which are due to the changes of shape, size, and the direction of the diseased bones. Even when the skull is largely thickened, and all its bones exceedingly altered in structure, the mind remains unaffected. The disease affects most frequently the long bones of the lower extremities and the skull, and is usually symmetrical. The bones enlarge and soften, and those bearing weight yield and become unnaturally curved and misshapen, suggesting the proposed name, "osteitis deformans." The spine, whether by yielding to the weight of the overgrown skull, or by changes in its own structure, may sink and seem to shorten, with greatly increased dorsal and lumbar curves: the pelvis may become wide, the necks of the femora may become nearly horizontal, but the limbs, however misshapen, remain strong and fit to support the trunk. In its earlier periods, and sometimes through all its course, the disease is

attended with pains in the affected bones,—pains widely various in severity, and variously described as rheumatic, gouty, or neuralgic, not especially nocturnal or periodical. It is not attended with fever. No characteristic conditions of urine or of feces have been found in it. It is not associated with any constitutional disease, unless it be cancer, of which three out of the five cases recorded in the paper were the subjects. The bones examined after death show the consequences of an inflammation affecting, in the skull, the whole thickness, in the long bones chiefly the compact structure of their walls, and not only the walls of their shafts, but, in a very characteristic manner, those of their articular surfaces. The changes of structure produced in the earliest periods of the disease have not yet been observed, but it may be believed that they are inflammatory, for the softening is associated with enlargement, with excessive production of imperfectly developed structure, and with increased blood-supply. Whether inflammation in any degree continues to the last, or whether, after many years of progress, any reparative changes ensue, after the manner of a so-called consecutive hardening, is uncertain. The microscopic characters bear out this view of the nature of the process, and Mr. Butlin, in his report, discussing whether it might be of the nature of new growth, hypertrophy, or chronic inflammation, decides in favour of the latter. The paper goes on to point out the diagnosis from various forms of hyperostosis and osteo-porosis, some of which are dependent upon simple inflammation of bone, others upon strumous, gouty, syphilitic, and other specific inflammatory processes. In such cases it is rare to get the whole length of the bone affected, but the distinction between them and "osteitis deformans" is most evident in the clinical history, and the absolute retention of good general health in the latter. The only parallel in this latter respect is with chronic rheumatic arthritis, which, however, is perfectly distinct, and is never associated with osteitis deformans. Rachitis and osteo-malacia have scarcely a feature in common with osteitis deformans. In rachitis the bones are too short, too small, and have different curves to the elongated and thickened bones of this disease; and in osteo-malacia they are thin and bent in an angular manner. In conclusion, the paper indicated the variety of diseases which have given rise to different examples of the great porous skulls found in museums, mostly without any life history. Some of them are examples doubtless of—(1) osteitis deformans; others (2) of osteo-malacia, as in cases described by Durham and Solly, which are distinguished by their softness and lightness in proportion to their size; (3) of rachitis, where the skull is very light and friable, with a fine felt-like surface; similar skulls from young lions and tigers are to be found in the Museum of the Royal College of Surgeons; (4) from disease in early life, in which both cranial and facial bones become largely thickened, porous, or reticulated, and the cranial cavity diminished; to this group belongs the "leontiasis ossea" of Virchow; lastly (5) enormous, bossed, and nodular outgrowths from the skull, as in the specimen described by Dr. Murchison and Messrs. Hulke and De Morgan in the Pathological Society's Transactions, vol. xvii.—*Lancet*, Nov. 18, 1876.

43. *Trephining*.—M. SÉDILLOT, at a late meeting of the Academy of Sciences in Paris, communicated a paper on preventive trephining in fractures with displacement of splinters of the internal or vitreous table of the cranium. The author, in his former communications (*Comptes Rendus* of Oct. 12 and Nov. 16, 1874, tome lxxix.) on the fractures of the internal or vitreous table of the cranium with displacement of splinters, had demonstrated that trephining is the only method of preventing inevitable and nearly always mortal complications. The present paper contained one hundred and six confirmatory cases, partly derived from the publications of MM. Chauvel, Gross, Coehu, T. and J. Boeckel, and Sehalck, and several from M. Sédillot's own experience. Out of the one hundred and six wounded, seventy-seven were trephined; twenty-nine were not operated on; nine trephinings were preventive—that is to say, they were performed before the appearance of primitive or consecutive accidents. After the first day sixty-eight curative operations were done with the object of remedying grave complications, such as paralysis, loss of consciousness,

convulsions, coma. Amongst these twenty-one operations were performed in the first five days of the wound, and forty-seven were delayed until after that time. Out of a hundred wounded patients the external table of the cranium was found unfractured in twenty-one cases; and as the majority of the patients at first showed few symptoms, their wounds were frequently thought to be but slight. Out of the twenty-nine wounded suffering from vitreous fractures with splinters not trephined, there were one cure and twenty-eight deaths; out of the seventy-seven trephined, twenty-nine cures, eighteen deaths. Nine preventive trephinings gave six cures and three deaths; sixty-eight curative trephinings gave twenty-four cures, forty-four deaths; twenty-one early trephinings, eight cures, thirteen deaths; forty-seven retarded operations, fifteen cures, thirty-two deaths. These results, according to the operator, were the confirmation of the facts and precepts laid down in his preceding communications. The mortality was in proportion to the delay in the application of the trephine; two-thirds of the patients were saved by preventive trephining; more than a third by early trephining; less than a third by retarded trephining, and only one in twenty-nine in the cases where recourse was not had to trephining. M. Sédillot reminded his audience that he had proposed, in cases of doubt or hesitation as to the existence of a vitreous fracture, to have recourse to explorative trephining which Dr. Gross, of the Faculty of Medicine of Nancy, had performed under very bad conditions of general health. This operation was performed for the first time, and will certainly be again attempted. The patient, it is true, died, but death must not be attributed to the laying bare of the diploë. The suppurated state of the dura mater showed that it had received an indirect contusion, and the uncovering of the diploë does not usually bring on accidents, as we see in superficial excisions of the cranium by sabre-wounds. Surgical removal of a body fragment of the fractured external table does not cause contusion of the diploë, divided and laid bare, in all the applications of the trephine. Therefore it is allowable to renew this attempt. M. Sédillot also analyzed ten cases of trephining to demonstrate the fact that complication of vitreous fractures, the time elapsed after the wound, the circumstances under which the wounded are placed, and their degree of vitality, have a great influence on the condition of the patients who succumb quickly to, or resist in a surprising manner, nearly identical lesions.—*London Med. Record*, Nov. 15, 1875.

44. *Fracture of the Cranium with Depression; symptoms of compression; cure without trepanning.*—M. BERGER communicated to the Surgical Society of Paris, Oct. 11, 1876, an interesting case of this. The subject of it was a child aged thirteen years, who was struck on the right parietal region by a heavy bolt, which had fallen from a great height, causing a contused wound of the scalp and a rather extensive depression. The patient fell senseless; reviving afterwards he was sent to the hospital, where he had successively two attacks of violent general convulsions, terminating in coma with contraction of the upper limbs and squinting. These symptoms disappearing spontaneously, M. B. concluded not to resort to trepanning. By the end of the second day all the cerebral symptoms disappeared and did not recur. The wound and the extensive denudation which at first existed were covered with granulations, and the patient recovered.

M. Berger called attention to the less grave prognosis in traumatic lesions of the cranium in young subjects. He attributed the convulsions in the above case to the irritation of the surface of the parietal convolutions by the fragments of the depressed bone.

In reference to surgical interference where there is an absence of cerebral symptoms menacing life, M. B. thinks that expectation is indicated by recent statistics, especially those of Dr. Bluhm of 925 cases of trepanning. This operation resulted the more favourably the longer time had elapsed after the injury. Thus primary trepanning in fractures of the cranium with depression resulted in a mortality of 57.14 per cent.; secondary trepanning in a mortality of 40 per cent., and later trepanning in 16.67 per cent. only. It is, therefore, he says, advantageous to postpone as long as possible surgical interference,

and to wait until the most positive indications present themselves before elevating the fragments.—*Gazette Hebdom.*, Oct. 20, 1876.

45. *Injuries to the Shoulder*.—Dr. M. SCHÜLLER, of Griefswald, in a contribution to the *Berliner Klinische Wochenschrift*, No. 37, 1876, on a simple guide to the differential diagnosis between fracture of the neck of the humerus and subcoracoid dislocation, alludes in the first place to the difficulty occasionally experienced by surgeons in distinguishing the one injury from the other, especially in fracture near the upper end of the humerus, in which the lower fragment, the shaft of the bone, is displaced inwards and into the axilla, whilst the upper fragment, the head of the bone, remains in the glenoid cavity. In this form of injury, which usually consists in fracture of the surgical neck of the humerus, the long axis of the arm runs obliquely inwards towards the coracoid process, the elbow stands away from the side of the trunk, and the deltoid muscle is flattened or even concave on its outer surface—all signs of forward dislocation of the head of the bone. In many instances a fracture may be readily diagnosed, partly through crepitation, partly from a determination of the characteristic form of the end of the lower fragment, and of the presence of the upper fragment just below the acromion. Occasionally, however, a precise diagnosis of this injury may be rendered : . . . much effusion of blood, absence of crepitation, and the . . . the upper fragment. Attempts at reduction performed again and again are in such a case always followed by an immediate return of the abnormal condition of the shoulder. Sometimes it happens that in one of these attempts at reduction the surgeon is able to make out crepitus, and then assumes that he has himself produced the fracture through the application of too much force. The author holds that under ordinary conditions it is impossible to produce fracture of the neck of the humerus in an attempt to reduce a dislocation at the shoulder. It often happens, however, that in a case of old fracture of the neck of the humerus, mistaken for and treated as a case of subcoracoid dislocation, the fragments are again separated in an attempt at reduction. The author does not altogether disapprove of the administration of chloroform in cases of doubt, but holds that apart from the fact that there may be cases in which the doubt cannot thus be cleared up, it would be more desirable to have some means of making the diagnosis surely and safely without anaesthesia. The method suggested as very simple and ready in its application is that of measuring the injured extremity, and especially the distance between the acromion and the point of the epicondyle. In every case of fracture of the neck of the humerus this distance is shorter on the injured than on the sound side, and this shortening is greatest in those cases which most resemble subcoracoid dislocation of the head of the bone. In this latter injury the distance between the above-mentioned anatomical points is increased. The author does not agree with Malgaigne, who held that this increase in the length of the arm is not constantly met with in cases of dislocation. There is no difference of opinion, however, as to shortening of the arm in every case of fracture of the neck of the humerus with displacement of the shaft inwards. Shortening, which in this injury is usually considerable, is, as was acknowledged by Malgaigne, never met with in cases of dislocation. The author, when measuring the distance between the acromion and the external epicondyle, takes care that the arm is abducted, and the forearm flexed at a right angle. The round extremity, when measured, is placed in a similar position. The tape is then carried to the external condyle from the same point of the acromion on each side, and from either its anterior or its posterior angle.—*London Medical Record*, Nov. 15, 1876.

46. *Excision of the Elbow joint*.—Surgeon-Major J. H. PORTER, Assistant Professor of Military Surgery, Army Medical School, Netley, makes (*Dublin Journ. Med. Sci.*, Oct. 1876) some interesting remarks on this operation, and relates two cases in which he has performed it, in one for gelatinous disease of the joint with enries of all the bones, in the other for pulpy disease of the joint

and extensive caries of the humerus and ulna. In both cases about two inches of bone were removed.

He states that "in investigating the experience of others, I was much impressed with the importance of the observations made by Mr. R. Hodges, of America, and Mr. C. T. Maunder, of London, respecting the method of operation to secure extension of the forearm. The former remarks that, in excision of the elbow, no transverse cut across the triceps should be made, and the latter (*vide British Medical Journal* of July, 1871) that it is essential to securing extension of the forearm, which power is not unfrequently lost, and for which he says the operation is responsible to preserve those tendinous fibres of the triceps muscle which are sent from beyond the attachment to the olecranon to blend with the fascia of the forearm, and especially with that portion of the fascia overlaying the anconeus muscle. Mr. Maunder commences the operation by a longitudinal incision at the back of the limb, in length three or four fingers' breadth both above and below, and crossing the point of the olecranon. He next sinks the knife deep into the triceps muscle, and divides it also longitudinally into two portions, the inner one of which is the more firmly attached to the ulna, while the outer portion is continuous with the anconeus muscle, and sends some tendinous fibres to blend with the fascia of the forearm. It is these latter that are to be scrupulously preserved."

To these suggestions of Drs. Hodges and Maunder, Surgeon Porter paid strict attention in his two cases, and "with the happy result of obtaining most perfect power of extension." "It is scarcely necessary," he adds, "to observe that with ankylosis in the straight position, there may also be power of extension; but as that result is not the only one desirable, it is necessary to try and induce the power of flexion so as to produce a generally useful limb, such as one possessing the natural motions of the shoulder, wrist, forearm, hand, and fingers. To obtain these results but little has been said by authorities, except as regards the movements of the elbow, and on these points opinions differ as to the period at which motion should commence. This, of course, might be influenced by the condition of the patient and the state of the wound.

"In the two following cases the limbs were first simply laid in an extended position on a firm pillow, and the wound dressed with lint saturated with carbolized oil, and cold applications to the outside. In both cases slight movement of the fingers was commenced the day after operation; about the fifth day supination and pronation of the forearm, and as soon as the inflammation consequent on the operation had subsided, flexion of the elbow, with slight extension, to prevent the ends of the bones coming into contact.

"When the patients were strong enough to sit up and go about, exercises were enforced with a weight suspended to a cord passed over a pulley, which brought into action all the muscles and joints of the affected limb.

"The electric induction current was also used with decided advantage."

In the first case five months after the operation the patient could "perform the following motions—scrub and sweep the floor, lift a considerable weight, place his hand behind his back so as to button his trousers, supinate or pronate the hand, extend the forearm, brush his hair and feed himself with a fork. The motions of the shoulder-joint were perfect, as well as that of the wrist, hand, and fingers. The sensation in the limb was similar to that in the sound one, and he possessed in every respect a useful arm, which would enable him to earn a livelihood."

47. *Subcutaneous Division of the Neck of the Femur for Ankylosis of the Hip-joint.*—MR. WM. ADAMS, in a paper read before the Royal Med. and Chirurg. Society, Oct. 10, 1876, stated that during the six and a half years which have elapsed since his first performance of this operation, he has collected from published and unpublished sources the details of twenty-two cases in which the operation has been performed, including five operated upon by himself. In the table accompanying the paper it is shown that the operation was successful in twenty out of twenty-two cases, death from pyæmia resulting in one case, and death accelerated by chronic suppuration following the operation in another case, that of a girl, aged eighteen years, who succumbed with symptoms of

kidney disease and tubercular deposit in the lungs. Such a result bears good testimony to the general safety of the operation the dangers of which may be greatly diminished by the judgment of the surgeon in selecting his cases, and the skill shown in the performance of the operation. In cases where there is a doubt as to the possibility of the neck of the femur being divided subcutaneously in consequence of alterations which may have taken place at the articulation, it should not be attempted, but some other operation below the joint, such as that first proposed and successfully performed by Mr. Gant, should be adopted. In two cases of ankylosis of the hip-joint, with malposition of the limb, Mr. Gant divided the shaft of the femur subcutaneously, just below the small trochanter, using instruments similar to those employed by Mr. Adams. This operation may be performed without difficulty or risk of hæmorrhage. Mr. Adams has twice divided with the subcutaneous saw the shaft of the femur for great deformity resulting from badly united fractures, and once the shaft of the humerus for straight ankylosis. No suppuration whatever occurred. Mr. Maunder has also operated in similar cases by dividing the shaft of the femur below the small trochanter, using the chisel and mallet instead of the saw—an operation resembling those performed by Langenbeck, Mayer, Pancoast, Brainard, C. S. Little, and others. The general result of the operation in the twenty-two recorded cases has been to correct the deformity and to obtain bony ankylosis, with the leg in a straight position. In several cases useful motion has been obtained, especially by Mr. Jessop of Leeds, Mr. Lund of Manchester, and Dr. Sands of New York. The paper concluded with the interesting fact that Sir C. Bell, in 1828, had proposed division with a small saw of the neck of the femur in the early stages of hip disease with a view to allow the head of the bone to remain at rest in the acetabulum, and the hope that a freely movable false joint would result at the seat of the operation. Bell pointed out that such an operation would be attended by small risk, and, although he never carried out his suggestion, it was interesting to note that it was brought forward three years before Stromeyer's operation of subcutaneous tenotomy. Mr. Holmes remarked that he had only performed the operation in a single case, which proved fatal, and in which, owing to the condition of the parts, the division of the neck of the femur was not subcutaneous. In many cases where ankylosis follows upon strumous disease it is impossible to make a subcutaneous section owing to the shortening of the neck of the thigh-bone, and the large amount of osseous deposits, fibrous thickening, and adhesions in the vicinity; and he expressed his regret that Mr. Adams had not stated the grounds upon which a selection of fit cases was based. The field of operation would be much narrowed if it were only resorted to where the joint was free from the parts around, as by such restriction the great majority of examples of ankylosis with great deformity would be excluded.

Mr. MAUNDER said that probably no example in modern operative surgery could be found associated with such great success and apparently with so little risk to life, as subcutaneous osteotomy. Mr. Adams had formerly pointed out the pathological conditions to which section of the neck of the bone was applicable, but not those to which it was inapplicable. It was in consequence of failure of section of the neck of the thigh-bone associated with tenotomy and forcible attempts at extension, in a case of fibrous ankylosis following strumous hip-joint disease operated upon by himself, and failure a week subsequently in another instance by Mr. W. Adams, which led him (Mr. Maunder) to resort to division of the femur below the lesser trochanter with a view to remedy the deformity. This he had accomplished several times with chisel and mallet. In two instances slight suppuration occurred for reasons explained in his paper on the subject at the Clinical Society. In the remaining five cases (one of division to remedy deformity from faulty union after fracture) primary union occurred without the least suppuration. Mr. Maunder urged the necessity of the operator avoiding penetration of cicatricial tissue, owing to the readiness with which this new-formed material ulcerates. This he believed to have occurred in three cases known to him. He expressed surprise that, such decided success having attended the use of the chisel, Mr. Adams should speak of it as less subcutaneous than when the saw was used. Mr. Adams had himself

performed the operation five times, and in one of these cases with an unfavourable result. It was even a question yet to be determined whether the chisel would not replace the saw.

Mr. ADAMS, in reply, admitted that the selection of proper cases was most important, and to this subject he had paid much attention in his pamphlet on subcutaneous osteotomy. The classes of cases in which the operation could be performed were—1st, the rheumatic, where ankylosis had followed acute rheumatism, as in the first case upon which he had operated; 2d, the pyæmic, where ankylosis ensued upon pyæmic abscess; and, 3d, those only of a doubtfully strumous nature, in which the disease had been arrested in the first stage. In other cases, where the head of the femur was extensively destroyed, and change had taken place in the neck, Mr. Gant's operation might be performed. But, wherever practicable, the neck should be divided, as there was more chance of producing a false joint there than there was in the shaft. Since his paper was written Mr. Maunder had improved his operation by using one chisel instead of three, and there was no doubt that this great success was partly due to Mr. Maunder's skill as an operator. He thought the operation applicable to cases of fibrous ankylosis which resisted other modes of treatment; as evidence of the operation being one well established in surgery, he pointed to the fact that the twenty-two cases related in his paper occurred in the practice of no fewer than twelve different surgeons.—*Lancet*, Oct. 14, 1876.

48. *Separation of the Spine of the Tibia*.—There is a fracture of the tibia, seldom or never described in surgical text-books, which is not without interest, and very possibly is more common than is generally supposed. A case presented itself to Professor DITTEL, of Vienna, not long ago: An energetic landlord was ejecting one of his customers, whose legs "crossed themselves backwards," when some one who was helping the host gave the unfortunate man a kick either in the calf or the ham, producing altogether a complicated and not very intelligible accident. Blood was effused into the joint; amputation followed puncture; and at an autopsy it was found that the anterior crucial ligament had detached itself from its lower origin, tearing with it an oval piece of the upper surface of the tibia. This case led Dittel to perform a number of experiments on the cadaver (*Centralblatt für Chirurgie*, No. 29), in the way of forcible flexion, extension and rotation of the knee; but he seems to have failed in any case to obtain the exact result which occurred in this and the two following cases. In extreme extension the tibia gave way, either as the result of impaction of the condyles of the femur into it or by separation of the epiphysis; and if rupture inside the joint occurred at all, the posterior ligament carried away its lower attachment. In over-flexion, on the other hand, it was the anterior ligament which gave way, but it invariably remained attached to the tibia, and carried away part of its insertion into the femur. A number of other experiments of the same sort were performed, with various results. In No. 38 of the *Centralblatt für Chirurgie* is the record of a case described by Poncet in the *Bulletin de la Société de Chirurgie*, 1875, in which death occurred from fracture, produced by falling down three stories. Afterwards, when operations were being practised on the dead subject, it was that the left knee-joint was filled with blood, of which no trace was visible externally, while the whole spine of the tibia had been torn off by the separation of the lower attachment of the anterior crucial ligament. A case almost identical occurred in the wards of University College Hospital in April, 1873, and we believe the specimen is now in the museum there. It differed, however, in the fact that the patient was a boy of eleven years, instead of being, as in the other two cases, of adult age. A cart-wheel passed over some part of his leg, producing such extensive destruction of soft parts that, in spite of attempts to save it, it was found necessary to amputate a fortnight after his admission. No special complaint of the knee was made, nor was there anything externally to point to an injury; but after the removal of the limb a condition precisely similar to that described by Poncet was discovered, but in this case the blood had been absorbed, and its previous existence was shown only by the yellow staining of the cartilage. One point may be added, which, if the close proximity of the

attachments of the external semilunar cartilage and the anterior crucial ligament be borne in mind, must almost certainly have occurred in the other two cases, viz., that the external semilunar cartilage went up with the anterior crucial ligament and the separated spine of the tibia, and thus remained adherent to the femur, while the internal, of course, kept its place on the surface of the tibia.—*Med. Times and Gaz.*, Sept. 30, 1876.

49. *Suture of the Sciatic Nerve.*—In the preceding number of this Journal (p. 586), there was noticed a case of this, and it is stated (*Lancet*, Oct. 21st) that the same operation has since been performed by LANGENBECK, and the details are given in a letter from Dr. Du Pré to the *Journal de Médecine* of Brussels. The sciatic nerve had been divided two years before by a fall upon a knife. The limb was wasted, and the outer part of the foot and leg was anæsthetic. A longitudinal incision was made over the cicatrix, and the two ends of the divided nerve were found two inches apart and surrounded by a considerable quantity of cicatricial tissue. Each extremity was considerably enlarged, the upper more than the lower. A small portion of the lower extremity was removed and examined for nerve-fibres, to ascertain whether its degeneration was so great as to preclude hope of recovery. Finding that it contained nerve-fibres, the extremity of the central portion was removed, and, the knee being bent, the extremities were brought together and united by two ligatures of catgut, the wound closed, and the knee kept in the same position. The interference with the nerve was followed by no bad symptom, and two months afterwards, although there was no return of motor power, it was thought that sensation had improved, for the patient could indicate the place touched, where before there had been no sensitiveness.

OPHTHALMOLOGY.

50. *Modified Operation for Cataract.*—M. GALEZOWSKI, at the recent meeting of the French Association for the Advancement of Science, described an operation for cataract, which he had devised. At the present time, he said, "every surgeon endeavours to modify Graefe's operation, which is at present almost abandoned." He described the modifications he had adopted; he does not make the sclerotic puncture and counter puncture, but restricts the incision to the limits of the cornea; he abandons the linear method, and substitutes for it an incision at the lower portion of the cornea, making a small flap. He also excises the lower portion of the iris, though the deformity of the pupil is then more observable, but this he thinks will be but a slight inconvenience to those who desire one thing, the restoration of sight. M. G. attributes to this inferior excision, the great success he has obtained, which is at present 100 per cent. Of 67 operations performed in the city, he has not failed in a single instance. By his method after the first steps of the operation the eye is free in its motions especially after the removal of the lens, and to this M. G. attributes the rarity of the loss of the vitreous. Another modification, which he considers not less important, consists in the abandonment of the use of the cystitome for the division of the capsule, and effecting this with Graefe's knife. As soon as the puncture is made the point of the knife is directed to the lens and the capsule may be divided easily; after the counter puncture is effected the flap is made. Latterly, instead of excising the iris he has made a simple incision of the sphincter pupillæ with very satisfactory results, but he has not determined to adopt this definitely. The statistics given to show the value of his method were as follows: Of 385 operations, 67 were performed in private practice, of which last all were successful. Of 322 operated on at his clinic, 288 were successful.—*Revue Scientifique*, August 26, 1876.

51. *Causes and Origin of Near-Sight.*—Professor ARLT, of Vienna, has published a small work on this subject, which has not yet reached us, but we give the following *resumé* of the distinguished Professor's conclusions, communicated to the *Boston Med. and Surg. Journal* (Oct. 19), in a letter from Dr. Hasket Derby.

"According to Prof. A., the ordinary immediate cause of near-sight is the lengthening of the eyeball in the direction of its sagittal axis. Increased curvature of the cornea, as well as abnormal curvature, position, or density of the lens are of exceptional occurrence.

"In connection with this departure of the eyeball from its normal shape, we find the sclera driven back and attenuated, especially about the posterior pole, the choroid and retina expanded, the vitreous increased in volume by means of serous exudation, rendered even somewhat fluid at its posterior portion, the longitudinal fibres of the ciliary muscle hypertrophied, and the circular but slightly developed, while the ciliary processes, the iris, and the lens occupy a deeper plane relatively to the basis of the cornea.

"It has never yet been demonstrated that this increased length of the eye is congenital. The myopia of new-born children is due to the great curvature of the lens that then exists. The existence of the so-called *conus* in new-born children has no connection whatever with an increased length of the eyeball in the sagittal direction. Myopia may originate in childhood.

"Thus myopia itself is never congenital, though a *disposition* to it may be. Nothing goes to show that there is an abnormal innate tendency in the eye to increase in length; indeed, the anatomical changes found in a myopic eye that has normal acuteness of vision go to controvert such a theory.

"That myopia may be *acquired* by individuals who have no hereditary proclivities in this direction we have distinct evidence.

"The principal among the disposing causes is a certain want of tone in and yielding disposition of the sclerotic coat.

"Another factor may be found in the use of muscular power, partly as regards the accommodation, partly as regards the convergence of the visual axes.

"The remote (that is, the predisposing or exciting) causes of acquired near-sight include everything that tends to cause the muscular power of the eye to be expended in one direction, be it excessive use on near objects, be it neglect of use on distant objects.

"If hereditary or diseased tendency exist in a given case, the ordinary employment of the eyes will tend to further the giving way of the sclera. If circumstances are simply favourable (youth and normal development of the organ), myopia can only ensue when the eyes are unduly tried and insufficiently rested.

"The change in shape of the eye is brought about by a gradual pushing out of its posterior wall. Neither muscular action (on the part of the ciliary muscles or oblique muscles) brings this about, nor is it caused by forcible expansion of the scleral layers, or of the optic nerve sheath; it is due solely to the repeated temporary increase of pressure in the posterior segment of the eye.

"This repeated temporary increase of pressure in the posterior portion of the eye is chiefly due to congestion of the uveal tract, and secondarily to exudation of serum in the posterior part of the vitreous.

"The congestion is caused by the impeded flow of blood from the *vase vorticosæ*. It is hardly likely that the simple exercise of the accommodation brings this about, but it is almost indubitable that, when the convergence of the visual axes increases, the rectus externus and the obliquus inferior muscles severally exert a pressure on the *vase vorticosæ* that impedes their circulation.

"These are substantially the views Professor Arlt has just put forth. The pamphlet is illustrated by plates showing the different conformation of the ciliary muscles in the myopic, the emmetropic, and the hypermetropic eye.

"With reference to the prophylactic measures to be adopted in the case of a student who exhibits acquired and increasing myopia, I was glad to find that Arlt advised entire disuse of the eye on near objects for a lengthened period, a course of atropine treatment, and, if possible, a sea-voyage or a prolonged journey, during which the eyes should be exercised on distant objects."

MIDWIFERY AND GYNÆCOLOGY.

52. *The Mechanism of Spontaneous Version.*—In the *Annales de Gynécologie* for June, 1876, Dr. GENEUIL relates the following case: A woman, aged twenty-eight, who had previously had three children, and had a full-sized pelvis, was pregnant for the fourth time. At full term slight labour-pains commenced about midnight. By noon on the next day the pains had assumed an expulsive character, and the membranes ruptured in the presence of a midwife who was attending, and who then detected an abnormal presentation. Dr. Geneuil, on being summoned, found the left arm, swollen and blue, hanging from the vulva, the foetal head being in the right iliac fossa. The os was tightly closed round the shoulder, and the hand could not be introduced into the uterus. Dr. Geneuil therefore decided that it would be impossible to attempt version, and resolved to perform embryotomy. At the end of half an hour, having made his preparations, he laid his hand upon the uterus, and was astonished to find that on the left side there was strong contraction, while upon the right there was none. Thinking, therefore, that since the pelvis was large, spontaneous version might be accomplished, he left the case to nature. By 4 P. M. the shoulder began gradually to recede, and by 4.30 P. M. the breech was presenting. The contractions then became uniform on the two sides of the uterus, soon increased in vigour, and at ten minutes past five a dead female child, rather above the average size, was expelled. The author believes that his observation in this case explains the mechanism by which spontaneous version is accomplished, and that the powerful contractions on the left side of the uterus forced the breech down, while its comparative laxity on the right side allowed the head, lying in the right iliac fossa, to recede.—*Obstetrical Journal of Great Britain*, Oct. 1876.

53. *Enemata of Chloral in Natural Labour.*—M. POLAILLON stated at a meeting of the Surgical Society of Paris (Oct. 4th, 1876), that injections of chloral per rectum had been recommended for the relief of the pain in normal labour. He had used it in 17 cases, injecting from 2 to 7 grammes of the hydrate of chloral. In most of the cases the labour was retarded or arrested, and it was necessary to extract the head, arrested at the vulva, with the forceps. The patients' sufferings were not alleviated. In other cases the chloral had not modified the labour; finally, in the smaller number, the labour progressed favourably. Hence, he concludes it is useless or even hurtful to give chloral to women in labour, at least, when attended with painful contractions and constriction of the neck of the uterus.—*Gazette Hebdom.*, Oct. 13, 1878.

54. *Extra-Uterine Foetation; Removal by Abdominal Section of a Living Foetus; Recovery of Mother and Child.*—Mr. THOMAS R. JESSOP records (*Lancet*, Nov. 4) a very interesting case of this. The subject of it was aged 26, in her second pregnancy. When admitted into the Leeds General Infirmary, August 13, 1875, she was emaciated and pain-worn, vomiting after everything swallowed, constipated, feverish, with a dry tongue, great thirst and a rapid, feeble pulse. It was abundantly evident that the patient was fast sinking. On consultation, it was decided that the diagnosis of extra-uterine gestation seemed complete and gastrotomy was decided on. Accordingly, on the 14th of August Mr. J. performed it. The patient having been placed under the influence of ether and the bladder emptied of urine, an incision six inches long was made through the linea alba, with the umbilicus at its centre. The abdominal wall was unusually thin, but more vascular than common, and the peritoneal lining, though natural on its free surface, appeared thick and velvety on section. Immediately upon the completion of the incision, the breech and back of the child, thickly coated with vernix caseosa, came directly into view. At the upper part of the wound the omentum was seen lying like a cap upon the child's shoulders; and inferiorly the funis, of natural appearance, passed

transversely across the wound, and was traced round the external aspect of the left thigh of the foetus to its attachment at the umbilicus.

The child was in a kneeling position, its breech presenting towards the mother's navel, its head folded upon its chest, buried beneath the omentum and transverse colon, the soles of its feet pointing towards the pubes, and its knees resting upon the posterior brim of the pelvis. Its removal was readily effected. The funis was tied and separated in the usual manner, and the child was handed over to the custody of two gentlemen previously appointed to look after its well-being. It was now seen that the gestation had been of the "abdominal" variety; no trace of cyst or of membrane could be found. The child had lodged in the midst of the bowels, free in the cavity of the abdomen.

A few bands of unorganized lymph of a very friable nature, lying upon, but not adherent to, intestines, were readily removed by sponging, and about one ounce of clear serum was found in the peritoneal cavity. On tracing the umbilical cord, the placenta, having a larger superficial area than natural, was seen covering the inlet of the pelvis, like the lid of a pot, and extending some distance posteriorly above the brim, where it apparently had an attachment to the large bowel and posterior abdominal wall. Near its centre was a round prominence, which seemed to correspond with the swollen fundus of the uterus beneath. Great and especial care was taken not to cause the smallest disturbance to its connections. The placenta was indeed left *untouched*. The umbilical cord was now brought out of the wound and shortened, so as to have its cut end protruding about two inches beyond the surface of the abdomen, where it was secured at the inferior extremity of the wound by means of a clamp, which has been invented by the ingenious chaplain to our Infirmary, Mr. Gough, for the treatment of the pedicle in ovariectomy. The wound was now closed by means of six silver-wire sutures passed through the entire thickness of the abdominal wall, and including the peritoneum, together with as many intermediate superficial sutures of silk. It was then observed that the prominence above the pubes, before alluded to, was due to the placenta covering the enlarged uterus. Strips of plaster, pads of lint, and a roller completed the dressings.

The child, a female, was well developed, considering that in all probability it had not reached the eighth month of foetal life.

On the 17th, the clamp was removed and the funis, in a gangrenous state, could be traced deeply through the wound. To prevent it from dropping into the abdomen it was secured outside by means of jute and adhesive plaster. From time to time she complained, when not under the influence of morphia, of very great pain at the bottom of the body and in the thighs. There was not at any time a discharge from the vagina, although she made complaint of pain and forcing as if due to uterine contraction. On the 18th of August her breast became distended with milk, and by the 22d it had disappeared again. Besides the nutrient enemata she now began to take a few spoonfuls of milk and gruel by the mouth. On 19th August, five days after the operation, the dressings were found soaked by a bloody discharge. This continued daily for some time in quantities varying from one or two, to as much as eight or ten ounces. On the 22d, it was observed to be offensive, and of a thick, dark grunous character; and a few days later the stench arising from it was most intense. On 24th August she had a severe rigor, lasting ten minutes, and this was followed by vomiting.

On August 29th the vomiting had ceased, and her general condition had so improved that her request to have tea and a biscuit was complied with. From this time her diet was improved daily, fish, eggs, chicken, etc., being cautiously added at intervals.

On September 4th the funis was cast off as a long, slender slough, its discharge being followed by a copious flow (six or eight ounces), of fluid.

The wound had now healed in its entire length, with the exception of the round hole at its lower extremity, which had previously been occupied by the umbilical cord. At this time three weeks had elapsed since the operation. During the next fortnight the discharge was most profuse. Two, three, and

even four times in the twenty-four hours she was seized with agonizing abdominal pains, which, after lasting from a few minutes to two or three hours, were at once relieved by an outpouring of a quantity of putrescent fluid. On the 10th of September I stood by her in one of her most severe attacks, and I was almost alarmed, upon hearing her exclaim, "There, I shall get relief," to see not less than half a pint of a coffee-coloured fluid, of the consistency of treacle and unbearably offensive, rapidly forced out of the wound.

On September 14th she complained of pain in the right leg and foot, and upon examination these were found to be slightly œdematous. There was also some tenderness along the course of the femoral vein in Scarpa's triangle. On the 15th a slough three inches long came away. On the 16th the discharge became purulent and decidedly less in quantity. It was observed that the supra-pubic prominence had now disappeared. By the 18th the œdema in the leg had gone, and on the 19th the patient sat up in bed to dinner. Her progress now became steady and equable. On the 27th of September she sat for an hour in a chair, and on the 9th of October she was able to be transferred to the General Ward. The discharge had now become small in quantity, thin and serous in character. On the 29th of October the wound is reported as quite healed, and three weeks later she returned to her home. From that time to the present, she has kept in good health. Menstruation commenced about a month after she left the Infirmary, and has recurred at regular periods ever since.

The child was as healthy, vigorous, and large as an average child born in the natural way, and it continued to thrive well till July, 1876, when, after a week's illness, it died of croup and inflammation of the lungs, at the age of eleven months.

55. *The Originator of the Double-curved Midwifery Forceps.*—Dr. McCLECKROCK has lately inquired into the history of the double-curved forceps, with the purpose of ascertaining to whom the credit of inventing the second, or pelvic, curve is due. His investigations show that the first person who devised and made use of this form of forceps was Dr. Benjamin Pugh, of Chelmsford, Essex, who had the instrument made about the year 1736. But both Levret and Smellie also had a similar instrument in about the same time—Levret in 1747, and Smellie in 1751. It is possible that the idea of a pelvic curve occurred to each of those eminent men independently, for there is no evidence to show that they were acquainted with the previous discovery of the instrument.—*Brit. and For. Med.-Chir. Rev.*, Oct., 1876, from *Proceedings of Dublin Obstet. Soc.*, April 8, 1876.

56. *On the Action of Midwifery Forceps as a Lever.*—Dr. A. L. GALABIN, Assistant Obstetric Physician to Guy's Hospital, in an interesting paper (*Obstetrical Journal of Great Britain*, Nov. 1876) discusses this question which was raised by Dr. Matthews Duncan in the issue of the same journal for March, 1876 (see *Monthly Abstract of Medical Science* for April, 1876, p. 180).

From the mechanical study of the question Dr Galabin deduces the following conclusions: 1. The oscillatory movement is superfluous in all cases where extraction can be effected by forceps with moderate force, and it is useless when the head is movable, friction taking little part in its retardation. 2. When the head is impacted, a very slight oscillation, in which the head is made to take part, may assist in starting it by converting the greater statical into the lesser dynamical friction. 3. When the head is impacted and great force is required for its extraction, a mechanical advantage may be gained from leverage by having recourse to an oscillatory movement. The oscillations should be of very small amplitude, and should only be continued if it is found that each of them causes a corresponding advance of the head. Each oscillation should be accompanied by firm compression of the head, to prevent the forceps slipping and the lever becoming decomposed, and also by the utmost tractile force which is considered permissible, to assist in fixing the fulcrum.

57. *Local Treatment of Puerperal Fever.*—Dr. FRITSCH, of Halle, strongly recommends the injection of large quantities of a carbolic acid solution (2 or 3 per cent.), so as to thoroughly wash out the uterus and vagina, and to completely distend the latter. To this end he throws in two, and sometimes three litres, i. e., from four to six pints, the temperature of the water being at 25° R. (89° Fahr.). The uterus, after a thorough cleansing out, need not be injected oftener than three times in the twenty-four hours; and after three or four days this need not be continued, but the cleansing and distension of the vagina must be repeated much more frequently and persisted in for a much longer time. Under this treatment not only are the local lesions soon ameliorated, but the febrile action, as indicated by the temperature-curves, abates. Prof. Schröder, on the reading of the paper, mentioned that Dr. Hildebrandt employed for injecting the vagina a glass tube, about as thick as a finger, each patient being provided with her own, which is broken on her recovery.—*Med. Times and Gaz.*, Nov. 18, from *Allg. Wien. Med. Zeitung*, Oct. 24, 1876.

58. *Pathology of Membranous Dysmenorrhœa.*—This subject has long been involved in difficulty, partly owing to the designations applied to it, and partly to the rarity with which accurate microscopic examination of the substances expelled have been made by competent observers. Dr. Beigel, whose competency in every respect no one can gainsay, regards the affection as an exfoliative endometritis. It is essentially characterized (a) by the expulsion of a membrane at the time of menstruation, and (b) by the expulsion of this membrane at indeterminate intervals or recurring every month.

Hence this exfoliative endometritis may exist, and does exist without dysmenorrhœa; physiology, etiology, and pathological anatomy demonstrate its nature. The name membranous dysmenorrhœa then is bad. At the same time the membrane expelled is not the consequence of a very early abortion; an erroneous idea which the name decidua menstrualis might justify. On the contrary, this affection is a cause of sterility or abortion. Moreover, it not rarely occurs in virgins, and its monthly expulsion has been observed in many cases.

Beigel's opinion is based on etiology and pathological anatomy. The affection is not specific; it comes on after primitive or secondary endometritis; it is often connected with diseases of very varied nature; general diseases, such as cholera and phthisis; uterine diseases, such as flexions, and especially retroversion; chronic metritis, tumours, particularly fibroids and polypi, and mechanical irritation. The formation of a membrane is the principal anatomico-pathological characteristic of the disorder. Its expulsion is but a consequence, an accident, which attends menstruation and metrorrhagias, and uterine contractions, which coincide with them. As the causes are various, so the microscopical characters of the expelled membranes are different. They all, however, present a common character; they are separated from the subjacent mucous membrane by a fibrinous layer containing free round cells. They are constituted sometimes by hyperplasia of the normal elements of the mucous membrane, sometimes by degeneration, by destruction of its parts, glands and epithelium; sometimes by the production of embryonal elements, and lastly, sometimes they contain round cells, flattened epithelium, and embryonal elements at the same time.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1876, from *Arch. f. Gynec.*, Bd. ix. heft. 1, 1876.

59. *Cæsarean Section for Cicatricial Obliteration of Vagina.*—Dr. GALABIN showed to the Obstetrical Society of London (Nov. 1st) the uterus and adjoining parts from a case in which he had performed Cæsarean section on account of cicatricial obliteration of the vagina. The patient, aged forty, had been married five years before, and two years after was confined for the first time. Although there was no contraction of the pelvis, she was two days in labour, and, as she stated, the child had eventually to be destroyed. Two weeks after delivery incontinence of urine commenced. She was afterwards for five months in Guy's Hospital, having a vesico-vaginal fistula just behind the pubes, which admitted the finger. She was seen by several surgeons, but it was considered hopeless to attempt any operation for her relief. When she

left the hospital the entrance of the vagina had contracted up to a minute aperture. The menses never returned, but after about a year she began to have periodic pains every month. Although marital intercourse appeared to be impossible unless the rectum were used, she again became pregnant. Labour pains come on on October 2, 1876, but never became vigorous. Fœtal movements ceased on the 4th. She was seen on the 5th by an extern attendant, who unfortunately mistook the case, having probably examined the rectum instead of the vagina. When she came under observation on the 7th, the sixth day of labour, the pulse had risen to 150. Since her condition was too desperate to allow the attempt at dilatation after incisions, Cæsarean section was resolved on. The orifice of the vagina only admitted a No. 6 catheter, being embedded in very dense tissue. On opening the uterus, the head of the fœtus was found to lie upwards, and no part of it had descended into the cervix, although it was dilated enough to admit two fingers. Some fetid gas escaped, and the surface of the uterus was covered with greenish slough. A trocar and cannula was passed from outside through the constriction, and the uterine wound closed with thick carbolized gut. Not the slightest contraction of the uterus could be procured, and hemorrhage took place from the placental site. Notwithstanding subcutaneous injections of ergot, and the use of manipulations, i.e., and eventually perchloride of iron, the patient expired before the abdominal wound was closed.

Dr. Meadows thought there could be no doubt as to the propriety of the treatment adopted by Dr. Galabin, but he took exception to one point in the operation—viz., the employment of catgut sutures in the uterus; they had most signally failed in his own and Dr. Routh's experience. The interrupted current would probably have been most useful in restraining hemorrhage and securing firm contraction of the uterus.

Dr. Rogers had seen two cases of Cæsarean section recover where no sutures had been employed for the uterine wound, the peritoneal cavity not being closed until firm contraction of the uterus had taken place. He had also seen two successful cases where silver wire sutures had been employed.—*Obstetrical Journal of Great Britain and Ireland*, Dec. 1876.

60. *Subperitoneal Fibroid Tumour of the Uterus removed through an Incision in the Posterior Wall of the Vagina.*—Dr. R. STANSBURY SUTTON records (*Chicago Med. Journ. and Examiner*, Dec. 1876) a case of this, the first case in which a uterine fibroid tumour has been removed in that way. He alludes to the four cases in which ovarian tumours have been removed by this method—that of Prof. T. G. Thomas, Dr. R. Davis, Dr. S. T. Gilmore, and Robert Battey, all successful.

Dr. Sutton's patient was a coloured woman 50 years of age, with a large solid tumour, ovoidal in shape, filling the right half of the pelvic cavity, and pushing the uterus firmly to the left lateral wall. The operation was performed June 25, at 11.30 A. M., as follows: The patient being placed on her left side, the bladder emptied with a catheter, and ether administered. "The posterior wall of the vagina was seized, about midway between the rectum and cervix uteri, with a tenaculum, and cut through with one stroke of the scissors; with a probe-pointed bistoury and the aid of a tenaculum, this incision was extended as far as possible towards the rectum and towards the cervix. All bleeding being arrested by sponging with cold water, the peritoneum was picked up with Sims' small tenaculum and cut through with the scissors. This incision was now made of the same length as the former, with the probe-pointed bistoury. The finger was now readily brought in contact with the tumour. An effort made to enucleate the growth in its position failed. The hand, first dipped in carbolized water, was carried into the cavity of the pelvis, the tumour grasped and all its adhesions forcibly broken up. It was found to be attached by a fleshy pedicle to the posterior wall of the uterus. When the hand was withdrawn, the small intestines followed into the vagina. These were carefully pushed back with the hand, which was again carried up to the growth. A pair of strong vulsellum forceps were carried closed along the front of the wrist and palm of the hand and carefully expanded over the tumour, which was now

seized and drawn into the vagina, the index finger of the left hand working back over the growth as much as possible the lips of the vaginal wound. The speculum was again introduced, and the exposed capsule incised as far as it could be reached and with the aid of a pair of dressing forceps, a tenaculum handle, and the finger nail, it was stripped back beyond the equator of the growth on all sides. The tumour now occupied the vagina, and, a second pair of forceps being fastened upon its stripped surface, the first pair were carefully removed. A pair of guarded hooks were also fastened into it and by these with Dr. Pollock's assistance, we pulled the tumour through the external outlet of the pelvis, Dr. Guthrie supporting the perineum with one hand and stripping back the capsule with the thumb nail of the other, as the tumour came out. Two vessels in the pedicle required ligation. The pedicle with some folds of small intestine in the vagina were now pushed back into the abdominal cavity. No stitches were applied in the vaginal wound. The patient had been forty minutes under the anæsthetic, of which eight fluidounces had been consumed.

"The patient was now put to bed, pulse 120. Ordered one-eighth grain morphia sulph. every three hours, oftener if required.

"4 P. M. Catheter used—to be used every six hours."

The patient died June 29 at 9 A. M.

Dr. S. says "a careful investigation revealed a wound of the small intestine, which had been made with a prong of the vulsellum during the operation. This wound was only discovered by making pressure along the intestines and finding that gas escaped at what was a mere pin hole, leading down from which was the line of a little rent which was so completely glued as to require some effort to separate the edges. At what stage in the operation this occurred I do not know. The danger was appreciated and careful attention given to avoid it. Doubtless the escape of gas was one cause of the peritonitis which carried her off."

61. *Treatment of Inverted Uterus by Elastic Ligature.*—Dr. ARLES communicated to the French Association for the Advancement of Science at its recent meeting a memoir on the treatment of inverted uteri by the elastic ligature. He reported the case of a woman who had been pregnant seven times and aborted thrice. She had inversion of the uterus which Dr. A. tried fruitlessly to reduce by all the means ordinarily resorted to. He then determined to draw down the inverted uterus and to surround it with a caoutchouc tube drawn moderately tight. The result was satisfactory; the tumour was detached in about fifteen days.

Dr. A. maintains that the elastic ligature is superior to other means hitherto employed: to excision; to the simple or metallic ligature; to the écraseur or to galvano-cautery, etc. etc. Dr. A. has never met with hemorrhage or peritonitis from its use.—*Revue Scientifique*, Sept. 2, 1876.

62. *Removal of Inverted Uterus by the Elastic Ligature.*—Professor COURTY relates (*Annales de Gynécologie*, September, 1876) two cases of removal of the inverted uterus by the elastic ligature. In the first case, the uterus was removed by Dr. Courty after he had failed to reduce it. A caoutchouc tube was fastened round the neck of the uterus, and its ends fixed by a waxed thread very tightly drawn. This was tightened from time to time. At the end of thirteen days the tumour was completely detached. At the end of two months the patient was discharged, cured. The second case was done by Dr. Arlès, who applied the ligature in the same manner, and the uterus separated on the twelfth day, without any complication, leaving the operator astounded at the simplicity, harmlessness, and efficaciousness of the operation. In order to mark out more clearly the line of section, Dr. Courty proposes to burn a furrow round the uterine neck with the galvano-cautery, in which the ligature will be more readily embedded.—*London Medical Record*, November 15 1876.

63. *Dermoid Ovarian Cysts*.—Dr. THOS. GRIFFITHS, of Swansea, exhibited to the Pathological Society of London (Nov. 21), two specimens of dermoid-ovarian cyst, removed successfully by abdominal section performed with antiseptic precautions and the use of catgut ligature. One was from a fairly nourished girl twelve years of age, in whom a tumour in the abdomen was first noticed when four years old. She suffered from pain in the abdomen at irregular intervals, and was first seen by Dr. Griffiths on October 14th of the present year. He found a movable tumour, the size of a large cricket-ball, seated midway between umbilicus and pubes. It could be pushed into either flank, into the pelvis, or epigastrium; when in the latter situation a cord-like structure could be felt continuous with it below. It was lobulated in form and elastic, and from its long duration and slow growth was thought to be of dermoid nature. On October 25th the abdomen was laid open, and the tumour found to be attached by a long pedicle to the left ovary. The pedicle was secured by catgut ligature, and returned into the peritoneal cavity. The case did well, the dressings were only disturbed three times at intervals of five days, and on November 9th the patient was convalescent. The contents of the cyst were chiefly hair, oily fluid, and foetal remains. The second case was that of a married woman, twenty-one years of age, who presented a tumour in the abdomen which had been first noticed four years previously. There was pain in the left iliac region, and the tumour was globular in shape, movable, and reached from the pubes to midway between umbilicus and ensiform cartilage. It was removed on November 8th, and found to contain six pints of creamy fluid and matted hairs; it weighed 1 lb. 3 oz. after removal. It also had a long pedicle, connecting it with the left ovary. The patient did well, and was convalescent on November 20th. Dr. Griffiths had had in all four cases, all treated in the same way. He asked for information as to the advantages of catgut over the clamp in securing the pedicle, and whether the ovary should be removed with the growth when the former was not intimately connected with the tumour. Mr. Spencer Wells did not think it necessary to remove the ovary where, as in these cases, there was a long pedicle between the cyst and the organ; but where any portion of the Fallopian tube is removed with a growth it would not be wise to leave the ovary behind, because of the possible consequences of maturation of Graafian follicles without means of escape for their contents. He recalled a case, thought to be a movable kidney, in which a tumour, afterwards ascertained to be a dermoid cyst of the right ovary, could be pushed into the right hypochondrium. He remarked that he had performed ovariectomy three hundred times before he met with a case of dermoid cyst, and then he had two examples almost at the same time; and now, out of eight hundred operations, he had had twenty examples of dermoid cyst, eight of which had occurred in the last hundred cases. Drs. Battey and Peaslee, of the United States, had recently stated that dermoid cysts should never be removed, on account of the fatality attending the operation; but out of his twenty cases Mr. Wells had lost only two.—*Lancet*, Nov. 25, 1876.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Sub-peritoneal Fibroid Tumour removed by Abdominal Section. By C. B. King, M.D., of Allegheny, Penna.

Catharine O——, æt. 36 years, a native of Switzerland, was admitted to the Western Pennsylvania Hospital May 13, 1876. She has always enjoyed good health until the present trouble began. First menstruated at eighteen years of age, and has been regular ever since. Was married at twenty-five, and is the mother of two children, the oldest ten years of age, and the youngest four years. Has never miscarried. Immediately after the last confinement, four years ago, she noticed a lump in her left side, but paid no attention to it, as it gave her no pain or inconvenience. On July 26, 1874, during a severe storm, the locality in which she lived (Butcher's Run) was flooded, and she was much frightened, as she was compelled to stand up to her waist in the water for some time. She is not aware of receiving any injury at the time, but shortly afterwards her abdomen began to enlarge, and slowly increased to such an extent as to seriously interfere with respiration and locomotion. On the tenth of last April she was visited by Drs. McCann, Smith, and myself, when we drew off about fourteen quarts of fluid, which relieved her very much. The fluid was albuminous, did not coagulate on exposure to air, and contained no ovarian cells. When admitted to the hospital, the abdomen was considerably distended with fluid. The uterus could be plainly felt above the pubes very much enlarged. In the left side was a tumour about the size of a child's head. It was hard, and could be easily moved about in the abdominal cavity, but appeared to move independently of the uterus. The uterine sound entered $6\frac{1}{4}$ inches, but the uterus remained fixed; evidently bound down by adhesions. There was considerable œdema of the lower extremities. The urine was normal but scanty, and passed with some difficulty. As she had been compelled to remain in bed for the last five months with insufficient food, she was very anæmic. Her appetite was poor, menstrual flow regular and of normal quantity, except upon two occasions when she lost large quantities of blood. She was put upon iron, quinia, and strychna.

May 21. Pulse 89; temp. $98\frac{3}{4}^{\circ}$. Stomach rejects food, owing to enormous distention of abdomen. She was again tapped, and fourteen quarts of fluid withdrawn, which gave relief and enabled her to retain nourishment.

June 13. Pulse 90; temp. $99\frac{1}{2}^{\circ}$. Tongue clean; suffers no pain, but much inconvenience in breathing, from enormous distention of abdomen. Abdominal veins very much enlarged. The abdominal swelling is symmetrical, and measures as follows:—

	Inches.
Girth of body at ensiform cartilage	39 $\frac{1}{2}$
Midway between umbilicus and ensiform cartilage	40 $\frac{1}{2}$
At the umbilicus	43
Midway between umbilicus and pubes.	41 $\frac{1}{2}$
At the pubes	36
From umbilicus to each anterior spinous process	12
From symphysis pubis to umbilicus	20 $\frac{1}{2}$
From umbilicus to ensiform cartilage	9 $\frac{1}{2}$

The patient being etherized, an incision was made in the median line, beginning about two inches below the umbilicus, and extending five inches in the median line. There being very little bleeding, I went rapidly down on the peritoneum, which I incised, and drew off seventeen quarts of straw-coloured fluid. On opening the abdominal cavity, the ovaries were found to be normal. A large quantity of serum was sponged out which was highly coloured with blood from tearing up of recent adhesions between the uterus and abdominal wall. On the left side, just above the uterus, was found a fibroid tumour with a short and narrow pedicle attached to the fundus of the uterus. The pedicle was $\frac{1}{4}$ inch long by $\frac{3}{4}$ inch broad. Over the tumour were thickly spread enlarged veins, and these, collected into a plexus, were traced to the convexity of the liver, and were probably mesenteric in origin. The largest was $\frac{1}{4}$ inch in thickness. The tumour was slightly oval in shape, and about as large as a good-sized child's head at birth. The uterus was enlarged to the size of a double fist, and at one point behind, and to the right of the fundus, a protrusion could be felt, but no distinct fibroid could be defined.

There was no attachment between the uterus and abdominal viscera, but the uterus was bound to the anterior wall of the abdomen by adhesions which appeared to be recent, and bled freely when torn up. The tumour was separated from the uterus by the wire-rope caesarean; no bleeding from the stump. The plexus of veins, which were about the thickness of two fingers, only slightly held together by connective tissue and looked like a bundle of earth-worms, were then gently drawn out, and Atlee's clamp applied five inches from the tumour. One large vein, which came from the opposite side of the intestine, was separated from the clamp and brought out near it to avoid constricting the bowel as the plexus shrivelled up. The peritoneum was noticed to be of a deep red colour around the attachment of the uterus to the abdominal wall. There was considerable delay in securing a complete removal of serum and blood from the abdomen. The wound was closed with silver wire, the clamp being fixed at upper part of incision. The cut end of pedicle, which was not included very tightly in the clamp for fear of cutting through the attenuated vessels, was touched with persulphate of iron, and the usual dressings after removal of ovarian tumour were applied. The operation lasted one hour. The patient was ordered two drachms of solution of morphia, and beef-tea, as soon as her stomach would bear it, and to be catheterized every three hours.

I visited her in the evening, six hours after operation, and found her resting comfortably; no pain; pulse 90; temp. 99 $\frac{3}{4}$ °.

14th, 9 A. M. Pulse 102; temp. 99 $\frac{1}{2}$ °; takes beef-tea well; slept four hours during night; suffers no pain.

15th, 9 A. M. Pulse 100; temp. 99 $\frac{1}{2}$ °; had severe pain yesterday afternoon, which lasted about five minutes, and was relieved by the passage of gas; is cheerful, and slept some during the night.

16th, 9 A. M. Pulse 84; temp. $98\frac{1}{4}^{\circ}$; slept from 9 P. M. to 3 A. M.; dressings were changed, as the cotton was soiled by oozing of serum through the incision; wound looks well; no pain; takes beef-tea freely.

17th, 9 A. M. Pulse 79; temp. 100° ; slept well all night; no pain or tenderness over abdomen; says she is hungry, and wants solid food; wound looks well, and has united throughout whole extent.

20th. Pulse 72; temp. $98\frac{1}{4}^{\circ}$; rests well at night, and is free from pain; all stitches, but one, removed.

22d. Pulse 72; temp. 98° ; last stitch removed; clamp and ligature came away; pedicle dressed with powdered oxide of zinc.

24th. Pulse 70; temp. 98° ; bowels moved by olive oil; sits up in bed, and ordered solid food; prescribed five grs. citrate of quinia and iron, three times a day.

July 7. Has been walking about the ward since 2d inst; sound enters uterus five inches; discharged cured.

Aug. 2. Patient walked two miles to my office to-day, and says she is as strong as ever. There is no return of ascites.

Case in which an India-rubber Nursing-tube was Swallowed by an Infant. By JAMES BORDLEY, M.D., of Centreville, Md.

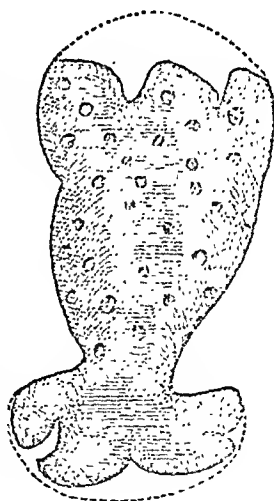
The following case appears to me as one of sufficient novelty to warrant its being recorded.

The accompanying wood-cut fairly represents the size, etc., of a rubber-nursing tube swallowed by an infant 18 months old, and passed per rectum, after remaining in the bowels for a period of ninety days, producing no symptoms worthy of note until four days prior to its expulsion (November 16th, 1875), at which time complete and obstinate obstruction of the bowels came on, with all the acute phenomena so characteristic of such trouble.

Although the child was watched with all that jealous care so characteristic of a fond mother and two grandmothers, no suspicion of the accident was entertained, and until the tube was evacuated it was never remotely thought of. But afterward the circumstances connected with its disappearance were recalled, and the date of its entry into the child's stomach could be fixed. One point at least of interest is the fact of the long retention of the tube without producing any ill effect; no symptoms of obstruction manifesting themselves until four days prior to its discharge.

After considering the question from every point, the only theory offering a satisfactory solution appears to me to be, that the tube, being too large at either extremity to enter the ileo-cæcal valve, was retained about that point until the action of the fluids destroyed the rounded point or month, thereby rendering it more compressible, when it was so changed in form that it passed the constricted point, for it was there that the obstruction existed.

The following description will serve as an explanation of the drawing: As may be readily seen from the cut, the tube as expelled differed considerably in form, size, etc., from its original. Its density and flexibility



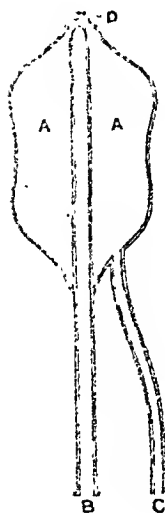
were also greatly altered. From a soft, smooth, and elastic tube it became a hard, rough, and nearly inelastic mass.

The parts marked out by the dotted lines represent the portion destroyed by the digestive fluids, and the dark spots upon it represent the general appearance of its surface, studded, as it were, with small but hard and rough tubercles.

The length of the tube was 2 inches; largest circumference $2\frac{3}{4}$ inches.

Description of an Improved Barnes's Dilator. By T. P. SEELEY, M.D., of Chicago, Illinois.

I have recently devised an improvement of Barnes's dilator, which all who have seen think well of, and which in actual practice has proved its usefulness.



A A represents a section of the dilator, which I have had made of two sizes, the larger of which is about two inches in width by three in length when not filled, the acuminate end being adapted for introduction into the cavity.

B is a tube passing longitudinally through the centre of the dilator, and attached to the distal extremity. Its object is to allow the entrance of a sound or director, by means of which the instrument is to be introduced into the uterus or rectum. It also serves to prevent the longitudinal extension, and thus increases the force of the lateral expansion of the dilator.

D represents a metallic socket at the end of the tube, to prevent perforation by the director.

C is a smaller tube connected with the dilator proper, by which it is to be distended with air or water after its introduction.

None who have used the Barnes's dilator will fail to appreciate the advantage of an improvement which renders quite easy its introduction and retention as long as may be required.

The improved dilators may be obtained of E. H. Sargent, of this city.

Supplemental Report of a Case of Ovariectomy. By JAMES P. ORR, M.D., of Andersonville, Indiana.

In the report of a case of successful ovariectomy (*American Journal of the Medical Sciences*, July, 1876, page 291), I conclude by stating, that after four successive hemorrhages, from a small abdominal opening, at as many consecutive menstrual periods, the patient reported herself entirely cured. Nine months after the operation I was consulted about a sore spot at the lower end of the original incision, and at the point at which I had made the second incision for the purpose of cleansing the abdominal cavity on the supervention of septicæmic symptoms. On making an incision at this point through the integument, and a thin layer of other tissues, I discovered the Chinese silk ligature with which I had tied the pedicle of the tumour, then ten months previous. I removed this silk; found it almost as perfect as when it had been applied; and now, two months and nine days since the last operation, I find, by personal observation, the entire incision completely healed, and the patient increased 35 pounds in weight since the original operation.

Circulation of the Blood Subjectively Seen. By C. A. WHITE, M.D., of Washington, D. C.

Sitting with the eyes completely closed, but usually better if facing the light, and looking intently as if to catch a glimpse of some object in the dark, one may perceive an appearance similar to that of the circulation of blood in the web of a frog's foot as seen under a magnifying power of, say, 100 diameters. The apparent capillary streams thus perceived in the eye are very numerous, but they are less definite and continuous than are those which we see in the frog's foot. The course of each also is irregular, and they seem to have no common direction, and are often much confused.

This phenomenon may be more distinctly observed if there be headache or other cerebral excitement, and I am disposed to regard it as subjective vision of the circulation of the blood in the choroid. I use the word subjective, not to imply that it is an "optical illusion," but to distinguish the phenomenon from ordinary objective vision, regarding it as the result of mechanical impingement of the blood-corpuscles against the proximal ends of the rods that compose the bacillary layer of the retina, as they rush against them in the capillaries of the membrane of Ruysch. The peculiar reticulated distribution of the abundant capillaries in that membrane accords well with the appearance as of capillary streams to be observed in the eye, as just explained.

That the appearance of light, and even of an object, may be produced by mechanical pressure upon the retina, is shown by the well-known "phosphène" perceived when the finger is pressed against the side of the eye. It is true that the apparent size of the corpuscles, assumed to be subjectively seen by this observation, is many times greater than their actual size; but then the retinal image of every object seen by ordinary vision is exceedingly small as compared with our conception of the size of the object. In the case of mechanical pressure against the retina also, the size of the phosphène perceived is always much larger than the part of the retina affected, and it is about the same size whether the finger-end or the head of a pin be used in producing it.

Autopsy of the Body of J. W. Wilkie, M.D., late Superintendent of the Auburn Asylum for Insane Convicts, as reported to his successor, C. T. McDonald, M.D. By D. DIMON, M.D.

The congenital abnormal condition of the right ventricle of the heart and aorta may give this report sufficient importance for publication.

The lungs were strongly adherent to the dorsal vertebra, the adhesions extending some distance from the vertebra along the ribs. The anterior surfaces of the vertebra were in numerous places rough, being denuded of the periosteum. The aorta from its base to beyond the arch was not less than three times its usual calibre, and its walls throughout of proportional thickness. The walls of the right ventricle were uniformly less than two lines in thickness, the heart, in other respects, natural. The muscular fibres were easily separated, but this defective tenacity was that of the tissues generally. The reversed condition of the right ventricle of the heart and the aorta could not be the effect of disease, but of a congenital displacement of the vessel formation of the right ventricle into the aorta.

The pulsations of the radial artery in a peculiar manner indicated the lack of the contractile force of the right ventricle when the doctor was in

his usual health, and was not changed during his sickness. It had a full pulsation, followed by one or two slight short ones; as if the unequal pulsations were made by the left ventricle drawing on the pulmonary capillaries now full, now not so full, instead of being uniformly filled by the equal action of the ventricles on the aortic and pulmonary columns of blood.

For more than six months previous to his dissolution he had suffered excruciating pains along the dorsal vertebra, from which he only found relief by a repetition of blisters. From first to last he experienced no disturbance of the functions of the heart and lungs. At intervals of ease he attended to his usual duties about the asylum, and in going up and down flights of stairs he noticed no increased frequency of respiration or of the pulsations of the heart. This he observed himself was evidence that there could be no serious organic change in that organ. The only effect of its abnormal constitution was to diminish the force as indicated by the unequal contractions on the whole circulation to the extent of the defect in the right ventricle supported by the pericardium, somewhat contracted over the right side of the heart. This diminution of pressure on the circulation was not sufficient to cause any perceptible inconvenience from ordinary physical efforts, and the doctor's vocation and inclination did not induce him to exceed the bounds of moderation in muscular activity.

Some of the medical gentlemen assembled at the autopsy were erroneously impressed with the opinion that the condition of the heart and aorta, as above described, was caused by rheumatism. The doctor did not fall a victim to that disease. Periosteal rheumatism causes calcareous deposits, exostosis, and ankylosis, and is not an ulcerative inflammation, a very severe and dangerous malady when it attacks the vertebral periosteum. Nor does rheumatism cause atrophy, or, more especially, the opposite states of atrophy and hypertrophy. A diseased action could not unite such opposite results.

The above case strikingly illustrates the fact of a force of motion, generated in the capillary circulation reciprocal with the heart's action. How this force of motion is generated is not the object of the present communication.

DOMESTIC SUMMARY.

Amputation at the Hip-joint.—Two very interesting cases of this operation, both successful, are reported (*New York Med. Journal*, Dec. 1876) by Dr. ESKINE MASON. The first of these was a healthy lad, aged eighteen, who had paralysis of the right lower extremity following scarlet fever. This became complicated subsequently by a faulty mode of walking, etc., with extreme talipes equino-valgus. For the past five years he has been enabled to place the limb with his hands in various abnormal positions, and desired his limb removed as it was an incumbrance. On examination after admittance into Roosevelt Hospital, it was observed that as the patient lies upon his back, the right thigh lies "upon its outer surface, and at right angles to the pelvis. In this position the head of the femur can be felt to be near the ramus of the pubis. The leg is at right angles to the thigh, and cannot be extended, owing to a subluxation of the tibia outward. There is a paralysis of the extensor muscles of the leg and thigh, though some of the flexors and gluteal muscles are called into action. This limb is greatly atrophied.

. . . "By circumduction of the thigh, the head of the femur can be made to change its position to a considerable extent. While at rest it seems to be just outside the ramus of the pubis, where it appears a new socket had been formed. No pain was elicited while examining the joint. The limb could be placed in almost every conceivable position."

Dr. Mason considered that any amputation short of exarticulation at the hip-joint would have been of little or no use to the patient, accordingly it was performed April 20 by Dr. M. "Esmarch's bandage was tightly applied to the limb as high up as the point of my incision (and allowed to remain on the limb during the operation), while an abdominal compressor was applied to the abdominal aorta, just above the umbilicus, by Dr. Peters, who most thoroughly supervised this part of the operation. The operation adopted was what is usually known as the circular method. The skin being divided with the large knife, it was drawn up by Dr. Markoe, and with a large scalpel I divided the various muscles to the ligaments, the soft parts being at the same time well retracted. As soon as the capsule was opened, Dr. Sands readily threw the bone from its socket. The anterior vessels were first ligated; the abdominal compressor was then removed, while the posterior vessels were controlled with pressure by sponges. The very small amount of blood lost was a surprise to all present. Thirteen vessels in all were ligated. It was estimated that not more than eight ounces of blood were lost during the whole operation, and half of this escaped from the limb through the femoral vein when this was severed. The fibrous capsule was then cut off close to the acetabulum, the inner half of the wound brought together with sutures, and the stump supported with straps. . . . The pulse at one time during the ligation of the vessels sank quite suddenly; a drachm and a half of brandy was at once given hypodermically, and two ounces per rectum, which quickly restored it. The head of the femur presented a spot of erosion, about the size of the little-finger nail, just below the insertion of the ligamentum teres, another upon the anterior surface of the head near the neck, while the posterior surface was flattened and slightly roughened, a fact which, under the circumstances, rendered the operation still more justifiable. The bone was found not to have been displaced from its normal socket, as previously supposed, but surrounded by a large and relaxed capsular ligament, which, with a long ligamentum teres, permitted the great freedom of motion. The right side of the pelvis was found atrophied and tilted downward, or retracted, presenting, indeed, that form of pelvis known in obstetrics as a high degree of the oblique oval pelvis. The acetabulum being very capacious, and approaching nearer the median line than usual, caused our error in diagnosis. It was this condition, with the elongated ligaments, which allowed us to throw the head of the bone very close if not quite into the perineum."

The patient left the hospital "in sound health and with a beautiful stump July 18."

The second case was a delicate-looking woman, aged thirty-five. "On admission there was found a tumour situated on the antero-lateral aspect of left thigh, two and a quarter inches below the antero-superior spinous process of the ileum, and extending from the median line backward to the great trochanter.

"The tumour was hard and immovable, and apparently connected with the bone; its margins not well defined; skin not adherent. There was no enlargement of inguinal or lumbar glands, and no growth detected in the pelvis. Rotation of the thigh caused considerable pain, and she was no longer able to stoop over far enough to tie her shoe, on account of the pain the attempt produced."

Upon consultation, it was deemed advisable to attempt the removal of the tumour, which Dr. Mason did March 28. "A straight incision was made, commencing three-quarters of an inch to the outer side of, and two inches below, the antero-superior spinous process of the ileum, and extending downward for the distance of five inches. From the middle of this incision another was made outward to the extent of three and a quarter inches. The tissues were then carefully divided till the surface of the tumour was reached, which presented a white, glistening appearance. The tumour was now seen to be situated directly below the capsule of the joint, and was evidently firmly attached to

the bone. Around the margin of the growth there were several spiculæ of bony growth. After the tumour had been disconnected from the soft parts, an attempt was made to detach it from the bone, but on so doing the sac ruptured, discharging a bluish-white material of the consistency of, and resembling very much, boiled starch; what remained of the tumour was then removed, and the bone which formed the posterior wall of this growth, together with the surrounding spiculæ, was cut away with the chisel; indeed, the whole surface of the exposed bone was thoroughly scraped. Just as we were about to close the wound, it was noticed that in a depression of the bone there was exuding some of the same kind of starch-like material as was contained within the growth that had been removed. In the attempt to scoop out this material, the necessary turning of the instrument caused it to drop into the medullary cavity, so soft was the bone-tissue at this point. From this opening there exuded a soft, pulsating mass. It was the opinion at this time that amputation at the hip-joint was indicated, but, the consent of the patient not having been previously obtained, the wound was closed."

The upper portion of femur subsequently increased in size, patient suffered constantly with pain, and with the patient's consent amputation at the hip-joint was decided on and was performed by Dr. M. June 17. Patient under ether; Esmarch's bandage applied, together with abdominal compressor to aorta. "A circular incision was made with the amputating-knife through integument, the skin retracted, and the tissues divided down to the bone, then dissecting them up along the femur to the joint; after disarticulation, the femoral artery was ligated, after which the abdominal compressor was removed, and other bleeding points secured, fifteen ligatures being used in all; hemorrhage amounted to only *two ounces*; flaps brought together and held by five sutures, and drainage-tube inserted; patient showed but slight amount of shock during operation, her pulse being good throughout. 6 P. M. Patient recovered from ether, and removed to her ward; there appears to be very little pain and no shock; given opii gr. j, and repeated in three hours; pulse 120; temperature 98½°." The patient suffered a good deal subsequently from vomiting, but ultimately recovered by the 14th of September. Dr. Delafield, who examined the growth, reports it as a mixed tumour—sarcoma and chondroma.

Dr. M. offers some interesting observations in regard to this operation, from which we extract the following:—

"In this operation a great aim of the surgeon has always been to have the patient lose as little blood as possible, and the fact that blood has been so freely lost no doubt may have been a cause of death in some of the earlier cases. For this reason the tying the femoral just below Poupart's ligament, as a preliminary step, was in some instances resorted to. Now the fear of danger from this cause has been removed. With the assistance of the abdominal tourniquet, controlling the circulation through the abdominal aorta, and the use of Esmarch's elastic bandage, less blood need be lost than we see daily shed in some comparatively trivial operations.

"As far as we have been able to ascertain, these are the first two cases of amputation at the hip-joint where Esmarch's bandage was applied, and it accomplished the end for which it was used to a most eminent degree."

The tourniquet which Dr. M. used was May's modification of Signoroni's, and completely controlled the aorta. He found it to be not easily adjusted and should he operate again would give preference to Lister's.

"The use of this compressor," he observes, "is not without its dangers, as has been shown in some cases where it was used in the treatment of aneurism, and as we were only too forcibly reminded in our second case, from which, as a result, we had a very serious case of peritonitis, which threatened to rob us of our patient.

"We are aware that the aorta has in several cases been compressed for hours (Murray's case, five hours) by a tourniquet, and we have used it ourselves in a case of aneurism, and without any serious symptoms being manifested; and while in our first case not a symptom, even of soreness, was present, our experience in the second case was such that we feel it a duty to sound an alarm, and one which we believe should not go unheeded.

"The time that this instrument was in use, in our cases, we regret was not accurately noted, but compression was only kept up till the vessels in the anterior portion of the wound were tied. The time of the operation, in the first case, till the bone was disarticulated, I am told by three separate observers who timed me, was twenty-nine seconds, so the period of compression of the aorta may thus be proximately arrived at.

"With the second case the compressor was around the body longer; here considerable difficulty was experienced in arranging the instrument, and, while drawing the patient down a little further to the edge of the table, the instrument slipped, which again required its adjustment; and when I had nearly made my incision through the integument, the femoral was observed to pulsate, and the compressor had to be altered again." Dr. M.'s experience has convinced him "that compression by the tourniquet, in this operation, should not be prolonged beyond the time necessary to secure the anterior vessels, the posterior ones being comparatively small and readily controlled by pressure from sponges till severally secured."

Dr. Mason speaks favourably of the circular operation, from the ease of its performance and the beauty of the resultant stump. Another great feature in its favour is, he says, "the ease with which it is dressed and irrigated without disturbing the patient to such a degree as would be necessary in the flap-operation. Again, the vessels, not being so obliquely cut, are perhaps the more readily taken up; and by this method, also, there probably remains a smaller suppurating surface; and, finally, if during the operation it be discovered that the bone may with impunity be severed just below or at the tranchanters, it can readily be accomplished without any detriment to the patient; such would not be the case with the method by flaps. Hence this mode of operating, I think, strongly commends itself in cases of gunshot, railroad, or kindred injuries. While thus speaking so favourably of this operation I do not wish to be understood as saying that it should be resorted to in every case, under all circumstances, for I believe a surgeon should never be exclusively wedded to one method of operating. My experience, however, has been such as strongly predisposes me in its favour."

Lister's Antiseptic Method in Ovariectomy.—Dr. J. MARION SIMS reports (*Medical Record*, Dec. 9, 1876) the following case in which he performed ovariectomy under the carbolic spray.

The patient, forty-seven years of age, noticed a tumour the size of an orange in the right iliac region last April. She consulted her family physician, who pronounced it an ovarian tumour. In June she consulted Dr. Thomas, who wisely told her the time had not arrived for an operation. On the 20th July she went to Philadelphia to see Dr. Atlee, who gave her the same good advice. I saw her on the 20th September. I have never seen any one so anxious for an operation. I dissuaded her from it, advising her to return home, and wait at least till next spring. I told her the tumour did not weigh more than ten pounds, and that an operation was not justifiable till she vomited her food, and began to emaciate. I saw her a month later. She declared she had not the strength to make the journey home, and that she threw up every time she took food. I still refused to operate. She wrote to Dr. Atlee, and he replied on the 6th November: "I can scarcely think a tumour so small can affect your general health so seriously. But if your emaciation and debility are the result of the presence of the tumour, then by all means it should be removed." I believe her vomiting and consequent emaciation were mainly the result of mental and moral causes. Whatever the cause, her declining strength and a recent fugitive attack of peritonitis warned me not to procrastinate the operation any longer.

The operation was done on Thursday, the 23d November last. I am particular in fixing the date, because I believe it inaugurates a new departure in ovariectomy.

Dr. Sass directed the spray, which covered the seat of operation with a delicate carbolic mist. The hands, sponges, and instruments were all dipped in carbolic water. The operation and dressing lasted forty minutes, the spray

being kept up all the time. It could have been continued two hours, if necessary. There were no adhesions. The peritoneal cavity contained six or eight ounces of a reddish serum. The peritoneal membrane was everywhere deeply congested. This fact explains the presence of reddish serum, and the previous attack of peritonitis.

The pedicle was very short, and at least three inches broad. It was tied in three sections with strong twine, and drawn out and fixed in the lower angle of the wound, clamp-fashion.

The external incision was closed by sutures, and a carbolized dressing applied.

The pulse never rose above 90, nor the temperature over 101.

Convalescence was fully assured in forty-eight hours, and the patient is now quite well. The tumour was polycystic, on right side, and weighed fifteen pounds.

I hasten to lay this case before the profession merely to urge the adoption of Lister's antiseptic method in ovariectomy, which, I am sure, will prove as valuable in this operation as it has in general surgery.

Dr. Sass's apparatus answered its purpose admirably, and I think he has rendered us a great service in bringing it before the profession at this time.

Dr. GARRIS, of Swansen, exhibited (Nov. 21st) to the Pathological Society of London (*British Medical Journal*, Nov. 25, 1876), two dermoid ovarian tumours removed respectively from females aged twelve and twenty-one. They were both removed under the carbolic spray. In both cases the pedicle was ligatured with the carbolized catgut, and then returned into the pelvis, and both cases recovered without any untoward accident. See Quarterly Summary in this number of the *Journal*, page 274.

Cold Bathing in the Treatment of Summer Diarrhoeal Affections of Infants.
—In the last number of this journal attention was called to an article on this subject by Dr. Voelke, of Berlin. In 1875, Dr. CORNELIUS G. COMEGYS, Lecturer on Clinical Medicine at the Cincinnati Hospital, called attention to the same method of treatment of bowel affections of children in the summer season, where fever is present. In the *Medical Record* for July 29, 1876, Dr. Comegys says, "It has been so successful with me, that I am confident, if applied more generally, it would lessen very greatly the rates of mortality in the summer season. I allude to that form of disease which is denominated enterocolitis.

"Before we are called to these cases, tentative measures for the relief of the diarrhoea have already been applied by the friends, so that the inflammatory stage is generally fully developed when we first see the patient. The skin is hot (temperature $102\frac{1}{2}^{\circ}$ to 105°), the pulse rapid (130 to 150), respiration 30 to 50, with frequent purging of semi-fluid, greenish, watery, fecal, and half digested matters; the mouth and tongue are dry; the thirst intense, but the water taken to slake it is quickly thrown off; the eyes are staring; pupils contracted; insomnia and rolling of the head, with utterance of distressing cries, due to headache from hyperæmia of cerebral vessels and unappeased thirst. Such is a general statement of symptoms.

"I at once proceed to give the little sufferer a bath in hydrant water, which with us, in summer, is about 75° . I have found it necessary to give this my personal attention at first, because the mother or friends will not carry out instructions, on account of the cries and resistance of the child; it seems to them a great cruelty.

"The contact of a hot skin with cold water is certainly painful for the moment, hence I immerse the body from legs upward gradually, sponging the skin in advance, so as to obtain tolerance.

"When the body and extremities are fully under, holding the head in the palm of my left hand, I pour over its surface cooler water, such as cistern water, which is here about 65° . This is kept up for ten or even fifteen minutes. Meanwhile the child ceases to cry or struggle, and is evidently greatly comforted; more especially when cool water is freely given to drink, the greedy swallowing of which shows how much of its distress is due to thirst.

"After the bath the patient should be wrapped unwiped, in a light woollen

shawl, and laid upon its bed, with a slight additional covering. The pulse has lost frequency, but is quite feeble; the breathing is slower and the skin quite cool, even bluish in hue. The sedation may seem at first too great; but reaction soon begins, a healthy warmth and perspiration are established, and the child falls into a peaceful sleep. The scene has so changed that one will find no difficulty thenceforth in getting a bath given three or four times in twenty-four hours, if the alarming train of symptoms make show of revival; and they will revive to such an extent as to require exhibitions of the bath from time to time for two or three days perhaps; for the diseased state of the mucous membrane within has not been as suddenly relieved as the abnormal heat of the body.

"In the mean time internal remedies should be freely employed. Quinia, whiskey, beef-tea, milk and lime-water are the chief agents. One grain of quinia and a drachm of whiskey every three hours, for a child eight to sixteen months old, looks rather formidable, but they will be found admirable while the disposition to fever lasts.

"Subsequently bismuth and pepsin are of great value to restrain diarrhœa and to assist digestion, so greatly at fault owing to the blow which the mucous membrane has suffered."

Successful Treatment of Vascular Tumours by Injection with the Fluid Extract of Ergot.—Dr. WM. A. HAMMOND relates (*Archives of Clin. Surg.*, October, 1876) three cases of this. He injected from half a drachm to two drachms at a time at intervals of ten days. In none of these cases was there at any time the least evidence of inflammatory action from the injections; he therefore attributes the successful results entirely to the action of the ergot on the organic fibres of the vessels.

Ergot in the Treatment of Purpura—Dr. L. DUNCAN BULKLEY, of New York, in an interesting paper (*The Practitioner*, Nov. 1876) states that—

I. The treatment of purpura, as advised in the books, is ineffective and tedious in lighter cases, and insufficient to save life in many of the severe or hemorrhagic cases.

II. Ergot possesses a very decided power in contracting the involuntary muscular fibres, causes divided arteries to contract, acts upon the smaller arteries and capillaries, and has been proved a valuable arrester of hemorrhage in many affections.

III. In purpura the action of ergot is very manifest, causing; when given in sufficient doses, an almost, if not quite, immediate cessation of the cutaneous and other hemorrhages.

IV. The most effective method of administration of ergot is by hypodermic injection, and this means renders it peculiarly valuable in purpura hemorrhagica where there is hæmatemesis, so that its administration by the mouth would be impossible, or in cases where the stomach would not tolerate it.

V. While ergotin, a purified watery extract, has been advised by many, and has been found to act efficiently in many cases, its action is liable to be uncertain by reason of age or faulty preparation, and after dilution with water it soon becomes inert.

VI. Fluid extract of ergot may be administered hypodermically, undiluted, and without local accident, as abscess or inflammation, if care be exercised; and its effect is very prompt and certain.

VII. Ergot may be thrown under the skin in any part of the body; the gluteal and shoulder regions answer well, but the places to be preferred are about the pectoral muscles or at the sides of the chest, about half way down.

VIII. Severe cases of purpura require the frequent repetition, even of very large doses, whether by the mouth or by hypodermic injections; both methods may be combined.

IX. Generally one or two grains of ergotin or from ten to fifteen minims of the fluid extract, hypodermically, once or twice a day are sufficient, but the former may safely be increased to five grains, and the latter to twenty or thirty minims, and repeated as often as every hour and a half.

X. Larger doses relatively are required when given by the mouth, and their action, thus given, is more slow.

XI. No fear need be entertained of any untoward effects; an ounce of fluid extract by the mouth, and seven grains of ergotin, hypodermically, have failed to give rise to any unpleasant symptoms; and from half a drachm to a drachm and a half of the tincture or fluid extract have been continued for several months without producing ergotism.

XII. Other preparations of ergot may be employed internally—as the powder, solid extract, wine, or infusion—the dose being proportioned to the effect required and produced.

Experimental Study of the Process of Repair.—Dr. I. N. DANFORTH, Lecturer on Pathology in Rush Medical College, has published an account (*Chicago Med. Journ. and Examiner*, Dec. 1876) of some interesting microscopic investigations made at brief intervals, of the same wound in a living tissue, from the time of its infiltration to its complete repair.

On the evening of February 23, 1876, a healthy, active, medium-sized frog was brought under the influence of curare, by the subcutaneous injection of about $\frac{1}{100}$ of a grain. The animal was then placed upon a frog plate, the tongue gently drawn out and its edges pinned to a piece of perforated cork, which was fitted to the opening in the frog plate; the perforation in the cork being covered by a slip of glass, upon which, of course, the tongue rested. Especial care was taken not to put the tissue of the tongue so much upon the stretch as to materially interfere with the free circulation of the blood, or the action of the bloodvessels.

"A minute wound was now made through the tongue by means of a pair of sharp pointed scissors, lengthwise of the organ, or in the direction of the muscular fibres; care being taken to select an islet of tissue which was least vascular, and in which the few vessels were quite small. The frog was now placed upon the stage of the microscope, the changes of the next half hour closely watched, and a faithful camera drawing made by Dr. Piper; the first drawing being executed at 9 o'clock on the evening of February 23, or about one hour after the wound was made. The appearances at this time were as follows: the wound was rather more than one-sixteenth of an inch in length; its form was nearly oval, the edges having been drawn apart by the contraction of the muscular fibres. The bottom or floor of the wound was covered by a pretty firm blood clot; the blood having slowly oozed from the end ends of the minute bloodvessels which occupied the track of the wound. In watching the escape of this blood from the vessels, I noticed this singular phenomenon, namely: that the escaped blood globules, or more properly the current of extra vascular blood, moved in compact and orderly columns across the floor of the wound; that is, after the vessels were cut and hemorrhage had ensued, the escaped blood did not flow in *all* directions in a helter skelter disorderly manner, but formed itself into different columns, representing the different vessels from which it flowed, and these several columns advanced in regular order, with but little variation in their course, until two streams chanced to encounter each other, when the larger and stronger stream would generally bear away the smaller and weaker one.

"In another hour all oozing of blood had ceased, coagula had formed in the wounded vessels up to the next collateral branch, and the condition of the wound and its immediate surroundings was that of apparent 'masterly inactivity.'

"Twelve hours after the injury the circulation was active in all parts of the tongue, except around the cut. In the immediate vicinity of the wound, the vessels are distended and gorged with blood, and stasis has occurred in the greater part of them. In some, however, the circulation is still wonderfully active and vigorous. The walls of the wound are mostly smooth and sharply defined, but from the (apparently) upper and lower border, a little bud, irregularly knotted, pale and terminating in a club-shaped extremity has commenced shooting out; the two buds (which are two masses of round cells) are almost opposite, and seem to be growing toward each other. 'I have an impression,' says the record which I made at the time, 'that they are incipient bloodvessels,

and that I am about to witness the growth of new vessels.' The floor of the wound presents, 1st, a few minute coagula; 2d, blood globules, both white and red; and 3d, a few pale, very minute fibres of fibrine."

Thirty-six hours after injury. The little growing buds have undergone no further development, on the contrary they have grown smaller. "The minute fibres on the floor of the wound have increased, and are interwoven in all directions, and in their interstices are many blood globules of both varieties. The surrounding vessels are enlarged, and somewhat tortuous; in vessels which show any movement of blood at all, the circulation is very active. Small coagula are seen at intervals along the border of the wound. The tissues surrounding the injury are becoming slightly cloudy, unlike the sharpness and clearness of the more remote structures. On examining the tissues involved with No. 5 Hartnack, I can easily see that the cloudiness is due mainly to the migration of leucocytes, which are rapidly insinuating themselves into the areolar and muscular interstices."

Sixty hours after injury. "The wound is considerably smaller; the cloudy appearance of the surrounding tissues has increased; the border of the wound is now quite thickly fringed with little buds or protrusions, which, upon being examined with a quarter inch, are seen to be composed almost exclusively of cells. In some of these growing buds, a minute bloodvessel, with its tiny blood stream, can be made out. These vessels are always in the form of loops, a single minute current flowing into the cell bud through one branch of the loop, and immediately returning through the other. Here, then, we have a granulation growing up under our eyes, under conditions which admit of its being quite freely observed in a leisurely and satisfactory manner.

"The circulation in the vicinity of the wound is very active; the blood-vessels are dilated and tortuous; stasis is no longer present except in a few quite small vessels. The veins in the periphery of the microscopic field are enormously distended, and the blood stream is both very dark and very slow. In some of the vessels in sight, the jerky, interrupted movement of blood, so often described by authors as occurring in inflammation, can be very distinctly seen. Many blood globules are seen on the floor of the wound, but the network of fibres spoken of in yesterday's record has nearly disappeared."

Eighty-four hours after injury. "The area of the wound is no smaller than it was yesterday; in fact it seems a little larger. New vessels are multiplying around the wound, and new buds are pushing their way into the open space. The floor of the wound is now occupied by a thickly woven reticulated network of minute fibres of coagulated fibrine, which have formed since the last observation. The interstices are filled by blood globules, both red and white. The circulation is very active, and the frog seems in good health."

One hundred and eight hours after injury. "The size of the wound has very greatly diminished. New vessels are still forming, new granulations are springing up, and the size of the wound is rapidly diminishing."

One hundred and thirty-two hours after injury. Several new bloodvessels have appeared "and the pre-existing ones, especially the veins, are enormously dilated. The wound diminishes with great rapidity. The walls or 'banks' of the wound now present a very curious and interesting appearance. At short intervals, little semicircular rills of blood are seen running along the shelving and somewhat precipitous 'banks.' Each little semicircle, or loop, is covered in by a dense layer of small round cells; the deeper layers of cells assume a spindle form; thus new fibres are formed, and the wound is repaired."

One hundred and fifty-six hours after. "The cut is reduced to a minute oval slit, and the floor is quite covered with minute newly formed fibres, interwoven in all directions. Meantime, new granulations are continually forming along the side-walls or banks of the injured part, and thus the solution of tissue-continuity is being repaired."

One hundred and eighty hours after injury. The record states the wound is practically closed, and its original area is nicely mapped out by the presence of new cicatricial tissue.

Fourteen days after the infliction of the wound "the frog was again enarized, the cicatrix examined, and a careful drawing made. It was easy to trace the

exact extent of the injury by the lighter colour of the new tissue. The cicatrix was entirely made up of new connective tissue: no regeneration of muscular tissue could be discovered. The new connective tissue appeared to be entirely the product of spindle-shaped cells, interwoven in all directions."

Among other points Dr. D. calls attention to the frequent changes in the condition of the blood-clot in the wounded part, and to the frequency of the escape of fresh masses of blood. At first free hemorrhage occurred, and the cavity of the wound was speedily filled with a coagulum. In a short time, the red globules had nearly disappeared, an intricate network of fine fibrinous fibres had formed, and in the interstices of this network, multitudes of mobile cells (*i. e.*, leucocytes) had accumulated. A few hours later, this clot had nearly disappeared, the fibres were wanting, except at the periphery of the wound, but a great number of leucocytes still remained and continued their wanderings over the floor of the wound. Several times while the tongue was under examination, the tenuous walls of the newly formed vessels would yield to the pressure of the blood stream. Hemorrhage would occur, a fresh clot would form, only to disappear after an interval of a few hours. Meantime new fibres were forming between the periphery of the clot (or successive clots), and the inner border of the wound, so that the area of the wound was constantly growing smaller.

The experimenter states that Dr. Piper, by a process invented by himself, has represented all these changes on magic lantern slides, "coloured so as to quite perfectly imitate nature in many instances, and enable us in all cases to differentiate the various tissues and structures by conventional colourings."

On the Effect of the Bipedal Position in Man.—Dr. HARRISON ALLEN made some remarks before the Academy of Natural Sciences of Philadelphia upon the physical characteristics of man, which result from the assumption of the bipedal position. He contrasted the position of a quadruped standing upon his hind legs, with that of a man in the erect attitude, such as that seen in the soldier standing at attention. The most conspicuous of these characteristics were seen in the absence of flexion at the knee-joint, the downward directed nostril, and the sigmoid curve of the supra-sacral vertebral column. The flattening of the sternum was a sequence upon the presence of the clavicle, and was, of course, not dependent upon the erect position. Yet, since a fixed clavicle (at least its mammalian expression) cannot net to advantage in any other than this position, the flattening can be assigned a secondary place in the group of characters.

Dependent upon the erect position—plus the flattening of the sternum—is the deflection of the heart to the left side. Dr. A. spoke at length upon the reasons of this deflection, and claimed for it a result of modification of the foetal proportions of the heart. The typical mammalian act is the foetal heart; the heart of the adult being a specialized form. The mechanism of the deflection is complicated. Entering into its consideration are (1) the fact that the right side of the heart is fixed by the cavæ at its right border, thus tending to tilt the right ventricle toward the left. (2) The greater weight of the posterior aspect of the heart, which throws the posterior wall downward and the anterior wall upward. (3) The fixation of the left side of the heart, by the pulmonary veins, directly in the median line, while the flattened sternum compels the apex to lie either to one or the other side of the median line. Dr. A., in conclusion, divided the characteristics of man into two groups. The first and most important being those the result of evolving from a quadrupedal type a bipedal specialized form; the second, being those belonging to the disposition of special organs, such as the teeth. Within this category may be placed the rudiments of structure, which are better developed in quadrupeds, and which often constitute the "varieties" of human anatomy.—*Proceedings Acad. Nat. Sci.*, December 7, 1875.

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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent to the Editors.*

The following works have been received:—

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CORRIGENDUM.

Page 446, 14th line, for $\frac{1}{400}$ th of a grain read $\frac{1}{100}$ th of a grain.

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THE
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FOR APRIL 1877.

ART. I.—*The Relations of Pain to Weather, being a study of the natural history of a case of Traumatic Neuralgia.* By S. WEIR MITCHELL, M.D., of Philadelphia; Member of the National Academy of Sciences.

I HAVE not troubled myself to learn how ancient is the popular idea that cases of old wounds, of injuries and diseases of the bones and of chronic rheumatisms suffer renewed pain on the approach of a storm.¹

But although this is a common belief, I am aware of no essay on the subject, and save an able paper by Dr. Hewson, of none on kindred topics, nor to my knowledge has it ever been submitted to the exact test of a scientific study. In the year 1872, while writing my book on Injuries of Nerves, and their Consequences, I had occasion to study the many curious symptoms belonging to the stumps of amputated limbs, and was struck with the number of persons who stated that their comfort depended largely on the state of the weather. On summing up their accounts of these facts I found, that of fifty cases of amputation, less than half felt unusual sensations upon the coming of an east wind, or during it; of the rest two-thirds insisted on their power to predict such a change in weather, and stated that they were unaffected by a thunderstorm, or a rain coming from the south. The remainder thought any great change in the weather was apt to cause them pain.

A few of these were intelligent persons, but most of them were unfit to serve as witnesses in regard to their own ailments. The subject, however, continued to attract my attention, and I became at length satisfied that it was worthy of a more full and accurate study.

¹ Many authors allude to this belief, and in the great Jenner's lively lines, "Forty reasons for not accepting a friend's invitation, or signs of rain," he says,

"Hark how the chairs and tables crack,
Old Betty's bones are on the rack."

I found that rheumatic people were unsuited to this purpose because of the fact that the sensitive cases were too constant sufferers, and what I wanted were persons who were liable to occasional onsets of pain, and who in the intervals were altogether free of it. I needed also to find these requisites in persons possessed of such freedom from constitutional disease as would liberate my already difficult problem from needless complications. Some of these conditions are to be met with in certain neuralgias, especially such as are of traumatic parentage. They are also present, although in less satisfactory form, in the early stages of some cases of sclerosis of the posterior columns of the spinal cord, with sclerosis of the posterior nerve roots. Such cases are I find exceptionally prone to feel atmospheric conditions—are as it were *sensitized*, to use the photographer's phrase; many of them are in fact too delicate tests for the conditions which evolve pain, so that the least exposure is felt; others are less sensitive, and are often in the possession for a time of singular vigour and freedom from other functional disturbances.

It was, of course, requisite that the persons to be used for this novel study should be unusually intelligent, and if possible, accustomed to the accurate examination of facts. Nor was it less needful to have proper instruments, and that large daily knowledge of the movements of storms, which now-a-days the signal office has rendered available; but the absence of which would a few years ago have made utterly futile any attempt to solve the interesting questions involved in this study of the natural history of pain.

I have been fortunate enough to find all of the needed conditions in certain cases of traumatic and ataxic neuralgia, but in the present paper I shall limit myself to the results obtained in a single case of neuralgia of a leg stump, because in it were combined in a high degree all the conditions which seem to me essential. These studies have in this case extended over three years, and after much annoying failure have led to some satisfactory results. Although guided and encouraged by me, they could never have proved successful had it not been for the unusual ability, interest in the task, and perseverance of the accomplished gentleman who has obliged me by making his own torments useful in the solution of the question of how far weather affects the production of certain forms of pain.

Before giving his results, as to which I shall quote largely his own admirable statements, I shall relate his case in full.

Captain Catlin, U. S. A., æt. 35, was in perfect health, when in August, 1864, at the Weldon Railroad, his foot was crushed by a twelve pound round shot. He felt as if the whole leg had been torn off, but had at the moment no pain, and only a sense of mechanical disturbance, neither was there any decided constitutional impression, none of what we call shock. Within three hours the leg was cut off below the knee; and the wound healing readily, he was up in thirty days. There was some pain during

this time, but it did not become important until from six to nine months had gone by. When seen by me in December, 1874, the pain was said to be in the metacarpo-phalangeal articulation of the great toe, and sometimes through all the toes, with more or less sense of twitching. Still more rarely, the attacks are in the heel, but are then unusually severe.

The neuralgie attacks are preceded by a tendency to sleep. They begin with a steady burning pain in the great toe and the inside of the foot, with a sense of twitching in these parts and a visible twitching in the muscles of the stump. The pain, which begins quite abruptly, increases in severity and lasts from twelve to thirty-six and rarely to forty-eight hours, and is intensified by eating a meal. In the intervals it does not exist at all, and sometimes it is replaced by a mere diffuse sense of burning, more or less intense in the small toes. No precaution averts these attacks, and however perfect the general health, the neuralgia continues. The stump itself is liable to be thrown into a state of convulsion on being much handled. These spasms consist in alternate contractions and relaxations of the various muscles, and endure for half a minute or more, a not uncommon phenomenon in stumps, and which I have elsewhere fully described. These curious local convulsions are not, I think, to be distinguished from Brown-Séquard's spinal epilepsies, and as they come on only at long periods after amputations, are possibly due to changes propagated along the diseased nerves to the cord itself, or to an irritative disturbance of the spinal or cerebral centres.

In the spring of 1875, Dr. John H. Brinton, at my request, excised one and a half inches of the peroneal nerves, but without material influence on the pains.

Captain C., after reading the remarks on weather in my book, began to pay attention to its influence on his own pain. During the progress of this research he has been stationed at West Point, N. Y., which is indicated on the maps by an asterisk.

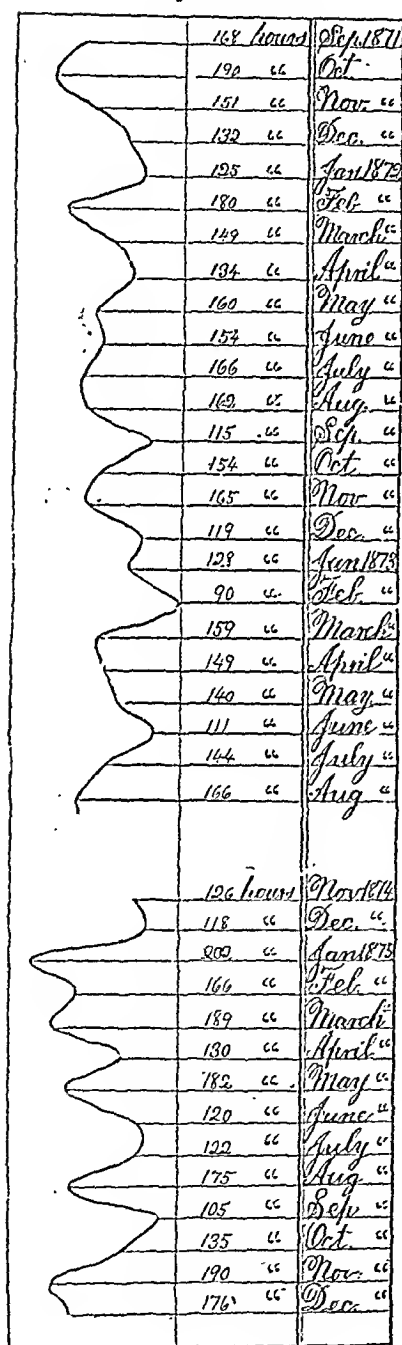
As yet, we are only in condition to set forth, and that incompletely, the laws which govern, in this particular case, the relations of pain to weather; and there will still remain for like study cases of common neuralgia, of ataxic neuralgia, of rheumatic pain; while we have also to learn whether or not, in some acute diseases, the body may not become over-sensitive to atmospheric impressions, which have no appreciable influence upon the man in health.

In the present case we have sought to discover how far the pain-product is influenced by the weight and moisture of the air, by the electric and ozone states, and by the temperature.

We shall begin by giving an annual neuralgie curve, constructed on the monthly ordinates of neuralgie duration (Diagram No. 1). It suggests a comparatively uniform continuity in the pain.

The neuralgia existed for the first year of this study during 1871 hours; second year, 1640 hours; third year, 1892 hours. The winters of these three years gave, added together, 1318 hours; the summers, 1320 hours, nearly the same; the autumns gave 1373 hours; the springs, 1392 hours each, exceeding the seasons of extremes in temperature. The amount for spring, which is our season of greatest depression of health tone, when

Diagram No. 1.



choreas return and epilepsies are difficult of control, but little exceeds the autumn pain erop.

Adding winters and summers, we have 2638 hours of pain ; and for the autumns and springs, 2765, an excess of 127 hours.

As regards the relation of Capt. C.'s pain to the seasons, we shall be able to show a much more exact and frequent coincidence between it and certain states of atmosphere in winter than in summer. The factors of summer storms are more numerous than those of the winter, and less easy to study. Owing, says my patient, to the greater effect of locality, on the progress of storms, we shall, I think, find those of the warm months hardest to interpret; because, at that season, radiation, evaporation, watereourses, active vegetation, and forests, all exercise then an influence, which in winter is unfelt. While, then, in summer, we find great trouble in relating the pain attacks to weather changes, in winter the problem is easier, and the relation between the two most manifest. But the amount of pain varies little at the two seasons, whence we have reason to conclude that there still exist, in hot as in cold weather, causal or producing relations between weather and pain.

During the existenece of attacks of neuralgia, lasting a day or more, there are variations which may be due to some of those curious ehronal relations of the human frame which are often so well brought out by disease ; or else may be under the influence of the diurnal changes in the ozone,

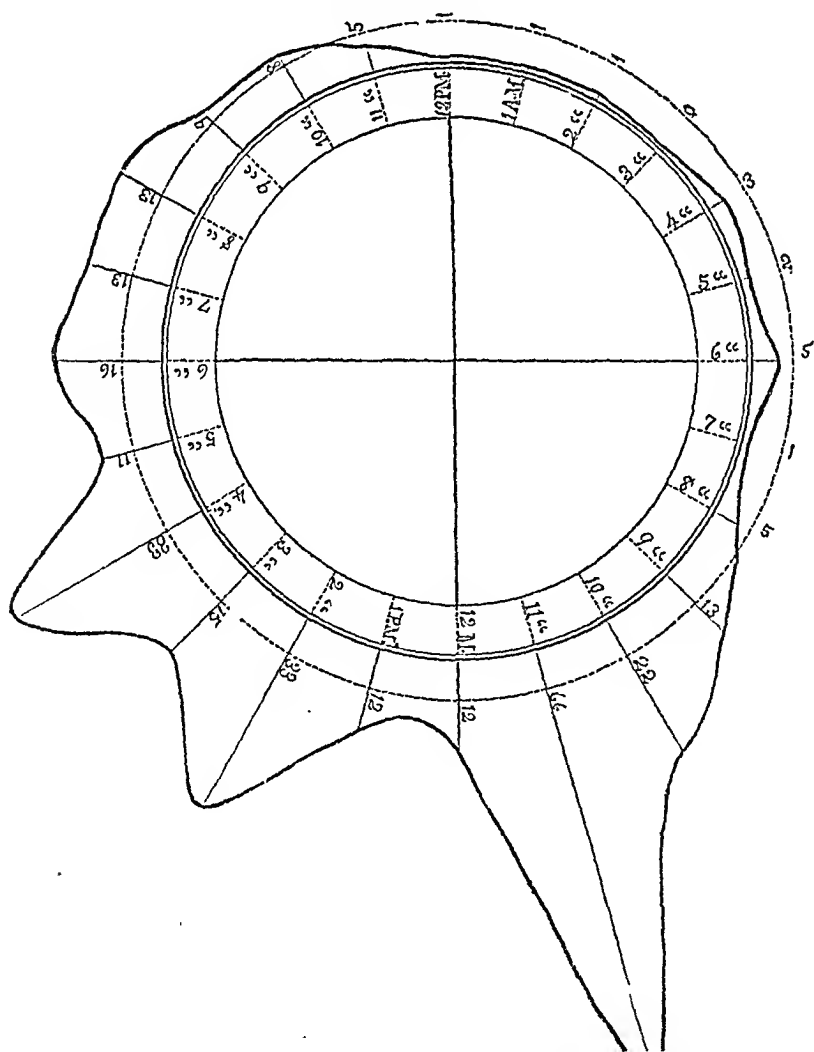
electric or magnetic conditions, as to the two latter of which, as yet, no exact investigations have been made.

The time of day at which the neuralgic disturbance is apt to occur, is another point of interest, as to which we have a good deal of exact knowledge in a number of the neuralgias. Of eleven cases of sciatica, subject to distinct remissions, the onset of acute pain was in nine at night, and in four of the nine between 12 P. M. and 4 A. M., a marked contrast to Capt. C.'s attacks.

The neuralgias of the fifth nerve are so prone to recur at the same hour daily (usually between 10 and 12 A. M.), that many physicians are apt to regard them all as of malarial birth. But even in such as are not due to ague poison, the same tendency has been perceived; and, as I have elsewhere stated, even in pure traumatic neuralgias of the fifth nerve a like peculiarity is often distinctly shown.

The chroral relations of the present case are beautifully exhibited on Diagram No. 2, which seems to show that from 12 P. M. to 3 A. M. the tendency to attacks is least, and that from 7 A. M. to 11 P. M. the tendency is greater, while it is greatest at 11 A. M., and next most common

Diagram No. 2.



at 2 and 4 P. M.; the pain being also, when present, most severe at the hours of greatest frequency of attack.

While, however, it is clear that as night comes on, and in early morning also, the attacks are relatively infrequent, we cannot be absolutely sure as to the zero of immunity being reached as it seems to be at night, because he is not always awakened by the onset, and may feel the continuing attack only in the morning. But, as I have said, the early morning and later evening hours being but little subject to attacks, we may feel certain, at least, that they are rare at night. Sleep is, indeed, a state which indisposes to pain; and a man who goes to sleep with pain of permanent cause, will awaken free of it, and so remain for a limited period.

The diagrams which follow at intervals need some explanatory words. The months are divided into days; and these, in the original diagrams, were again divided into fifths; so that the black lines, which denote the existence of neuralgia, showed at a glance the duration of pain by the number of these space intervals, which they covered. In reducing the diagrams it was found that the division of days in fifths became too close to be useful, and they have therefore been left out; but the relation of the neuralgia lines to days and parts of days has been accurately preserved.

The numbers of the storms are found at the side of the diagrams, and correspond to the numeration of the storms on the monthly maps of the signal office.

The curves of the barometer, thermometer, and hygrometer readings in their relations to the pain fits, need no present explanation, and are capable of being readily understood at a glance. The curves are constructed on observations made thrice a day, which is, we fear, too infrequent for very perfect hygrometric results. One of the months given in Diagram No. 6, and commented upon, is a close and detailed account almost hourly of the storms in their relations to the pain fits. I have left Capt. Catlin's observations on the various months almost untouched, as they consist of minute yet valuable commentaries on the individual attacks, and help to explain some of the seeming exceptions to the general laws which govern his attacks of pain.

Capt. C. has made some unsuccessful attempts to keep records of the atmospheric electricity, but has been baffled by difficulties connected with instruments. He has no especial pain in relation to thunderstorms such as is frequently felt by highly hysterical women.

The relations of Mr. C.'s pain to the amount of ozone have been studied with better fortune. I give Diagram 3, January, 1875, to illustrate this relation, which has also been carefully looked after through other months with the same or more striking results. During close observation of over two and a half months in midwinter, the highest reading of ozone (measured by colour test) during an attack of neuralgia, was only "1," and this but twice out of eighteen attacks. As a rule, the ozone was at zero during

the neuralgias, or there was at the utmost but a trace of colour, " $\frac{1}{4}$ " at most. The months observed were the latter half of December, January, and February.

Temperature.—The question of temperature in its relations to pain can hardly be considered aside from the barometric status of the atmosphere, and, as part of the perturbations which coincide with storms, and are the principal meteorological parents of pain. A falling temperature alone does not seem to be a competent pain cause, and a rise of the thermometer commonly occurs with a falling barometer. The rare occasions of extreme rise in temperature without much fall in the barometer, do not seem to give rise to pain, and this is in agreement with the general experience of neuralgic people, and also with their experience as regards artificial heat.

In the present case these points are illustrated by Diagram No. 4, July, 1875, where the thermometric curves are given, and in those for December, 1875, Diagram No. 6, where the like records are shown in relation to pain and the barometer, and where the temperature changes were extreme.

CAPT. CATLIN'S NOTES ON THE NEURALGIA FOR JULY, 1875.—*The Short Attack of Neuralgia on the 1st.*—The Signal Bureau Monthly Report says: "On the last day of June a decided area of high barometer progressed over the lake region in a southeastward direction, and made itself felt on the first day of July by cool and generally cloudy weather over all the Middle States except Virginia." Frequent rains followed this area in the lake region, and by a reference to the probabilities for 7.35 A.M. of July 2, we find areas of rain predicted for the Middle States on that date. The neuralgia of July 1 is attributable to this disturbance by a high barometer, which is rather unusual. The 7.35 A.M. prediction of the 2d was verified generally, but by the weather curve we seem to have had no rain at this particular locality.

The Neuralgia of the 6th.—This attack corresponds to depression IX. on map, and immediately preceded the rain as indicated in weather curve.

The Neuralgia of the 9th.—This attack corresponds to depression II. on map. The barometer became, as will be seen by the curve, very notice-

Diagram No. 3.

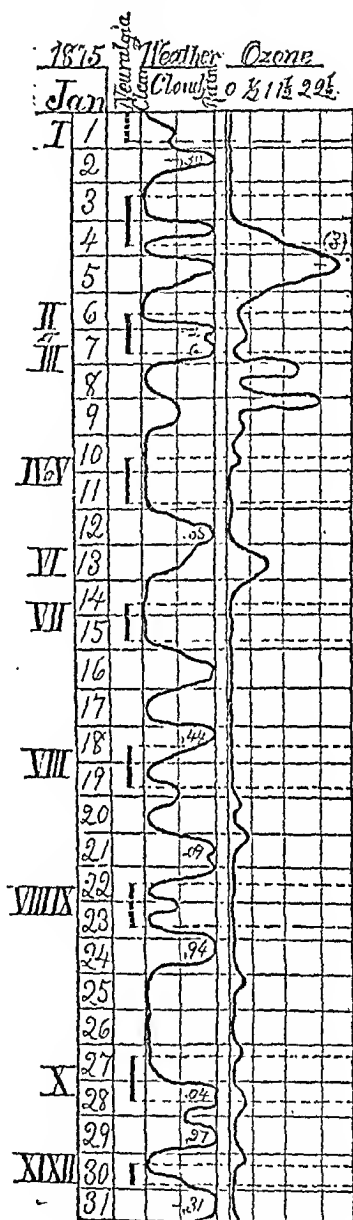


Diagram No. 4.

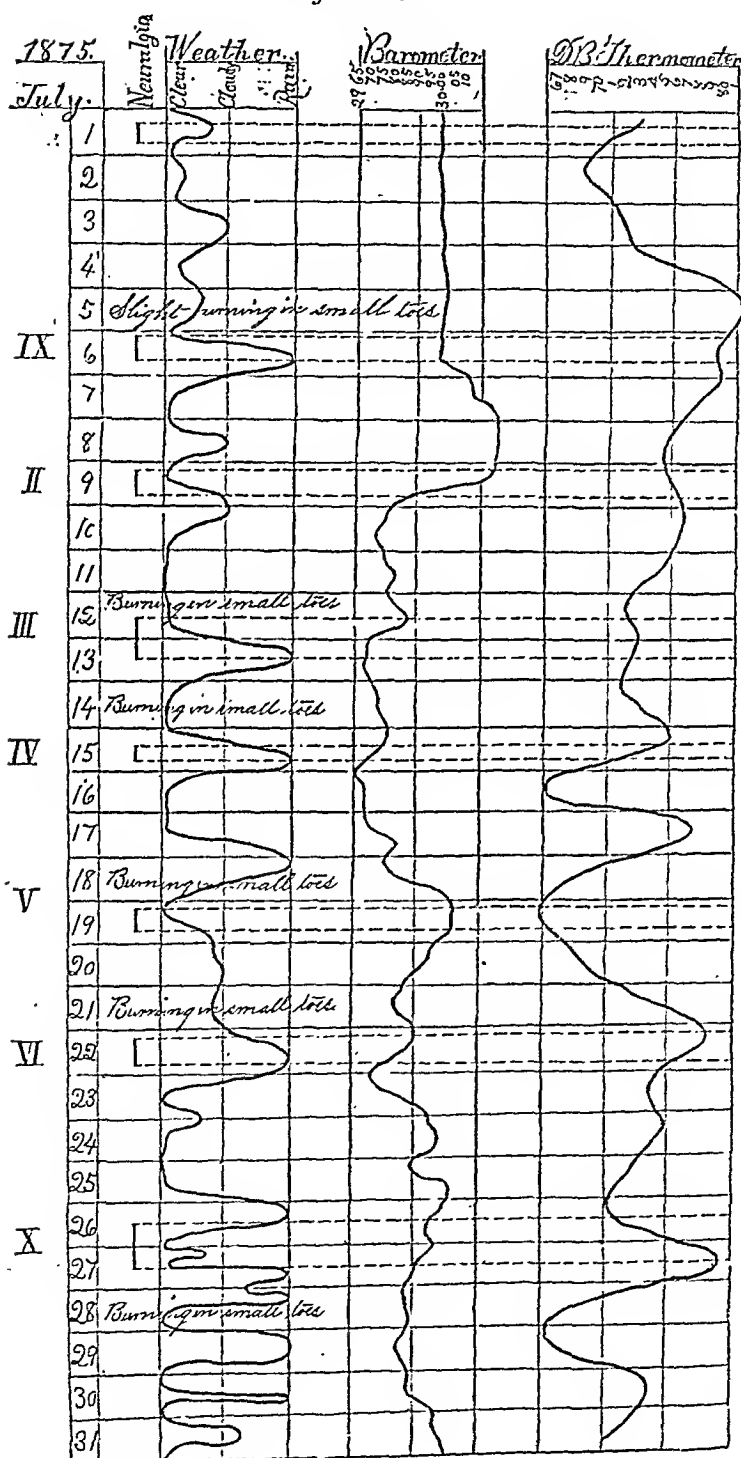
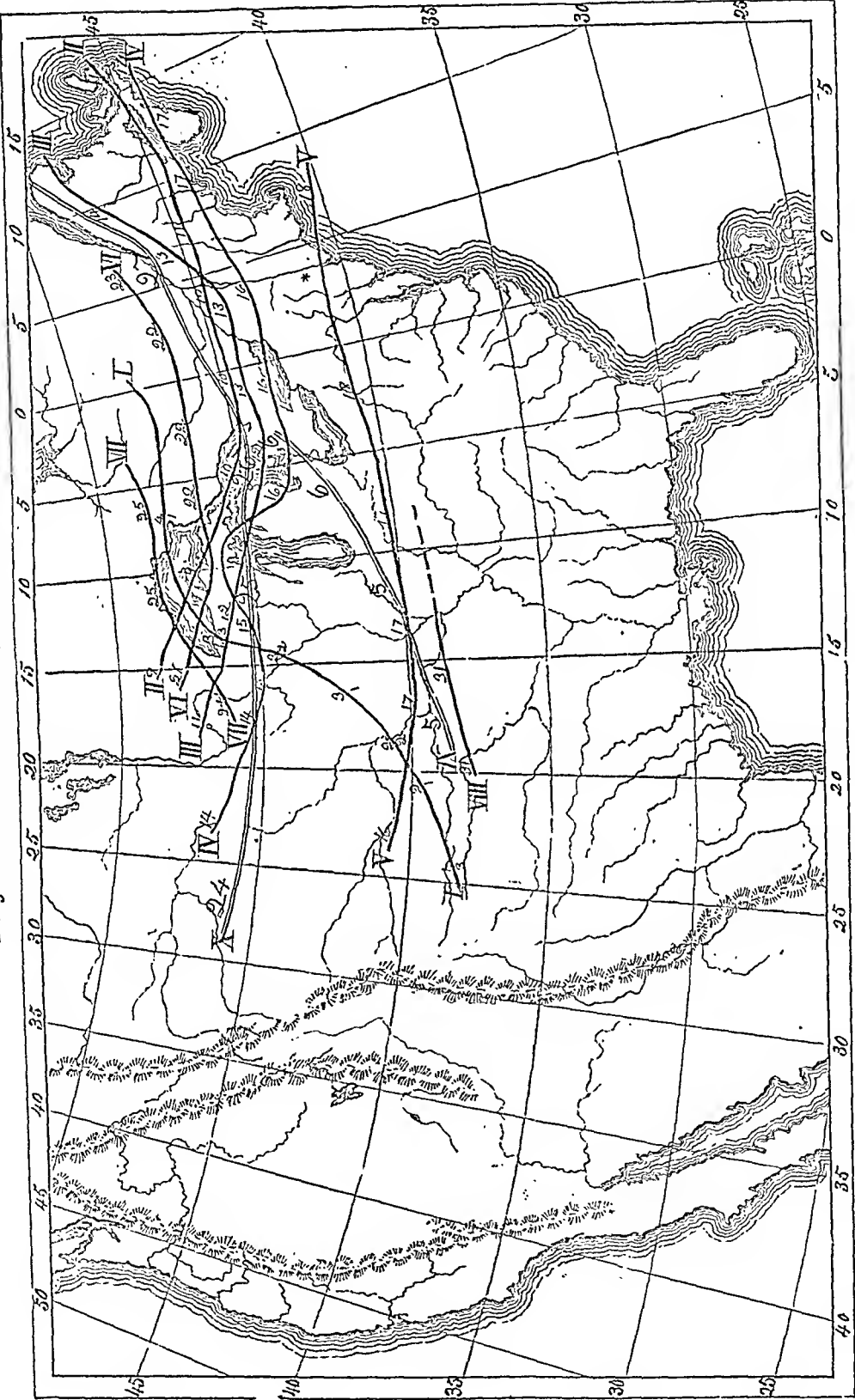


Diagram No. 5.—Storm Map for July, 1875.



ably depressed, and the temperature correspondingly increased. Rain was predicted for the 10th, but it seems not to have fallen at this place.

The Neuralgia of the 12th.—This attack regularly preceded the rain with normal conditions, and corresponds to depression III. on map.

The Neuralgia of the 15th.—The description above answers for this, and corresponds to depression IV. on map.

The Neuralgia of the 19th.—This attack followed instead of preceding the storm, as is usual. The storm V. on map originated in Kansas on the 16th, and "thence moved nearly due east to the middle Atlantic coast with unusually progressive velocity (highest speed 30 miles an hour) from the midnight of the 17th to the afternoon of the 18th, when it was lost sight of beyond Sandy Hook."

Its principal rain-area lay well to the north: And as will be seen, the barometric curve was very slightly depressed at this locality, just recognizing the rain point by a *very* modest bending towards it, while the two temperature curves almost completely ignored the barometer on their pre-established downward course. The greater disturbance occurred immediately after the storm left the coast, when the barometer shot up under the influence of a rapidly advancing high pressure. The burning in the small toes preceding the regular attack, shows that during the storm of the 18th the neuralgic elements were only mustering their strength. Besides, immediately before the advance of the high barometer, there was over the greater part of the United States a low barometer equilibrium which was not materially disturbed by the passage of the storm.

The Neuralgia of the 22d.—This attack was perfectly normal, and corresponds to depression marked VI. on map.

The Neuralgia of the 26th.—This attack corresponds to depression X. on map. One oscillation of this storm preceded this attack, and two succeeded it.

The burning in small toes and the rain which followed, were produced by a slight depression (not marked on map) which moved from the Ohio valley into the upper St. Lawrence on the 29th.

The depression marked I. on the map was not felt further east than the Ohio valley. The depression VII. did not reach beyond Lake Huron in its effects.

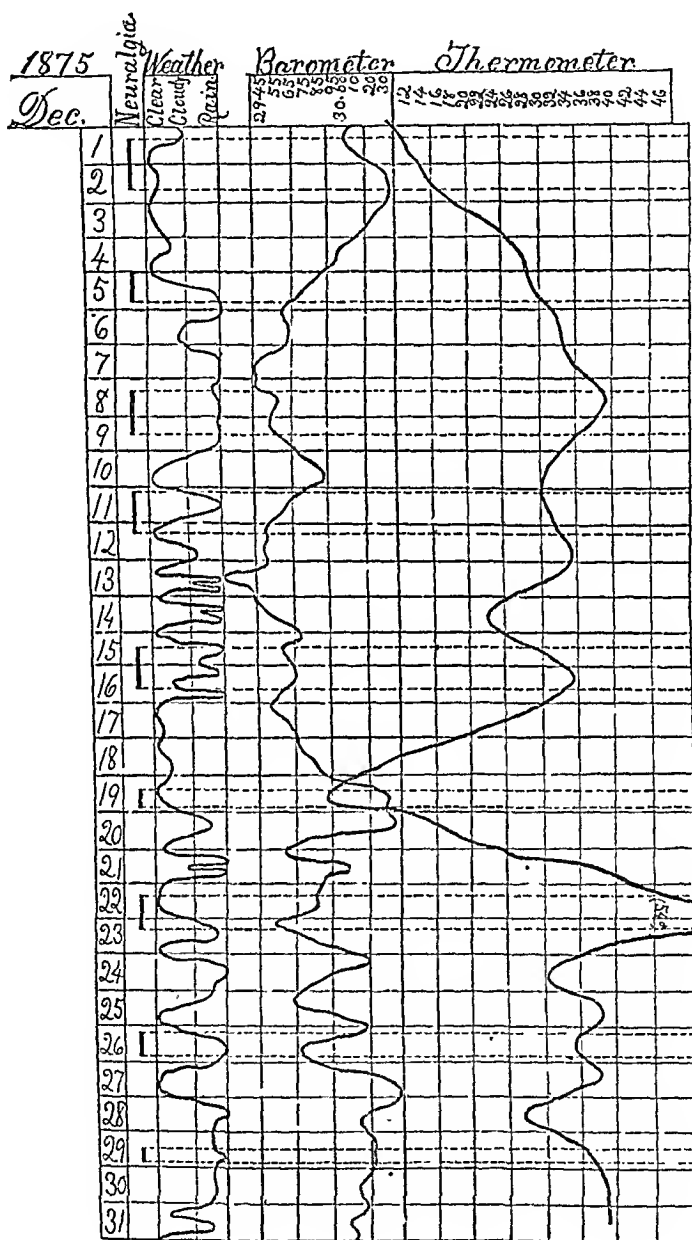
In the foregoing attacks belonging to low barometer storm centres, we find the attack of the 6th was felt 460 miles in advance of the lowest depression (No. IX.); that of the 9th, 900 miles (No. II.); that of the 12th, 720 miles (No. III.); that of the 15th, 640 miles (No. IV.); that of the 22d, 675 (No. VI.); that of the 26th, 360 miles (No. X.).

NOTES ON THE RELATION OF NEURALGIA TO METEOROLOGICAL CHANGES FOR DECEMBER, 1875.—In viewing the curves for this month, it will be seen that the barometer maintained about the average height, rather below the first half of the month, but above the latter half. The temperature curve was unusually erratic, at times wandering into the polar regions and again almost up to the summer mean. The rain-fall has been light, a little less than two inches, while the number of attacks of neuralgia and their duration seem not to have fallen at all behind records of previous months, but almost equalled the month previous (November), which was rather severer than usual.

The Neuralgia of the 1st.—By referring to the curve, it will be seen that this attack commenced on a medium high and rising barometer with clearing weather. These conditions are not unusual, but they are not

frequent.¹ Before constructing the curve readings (except the weather) I observed during the day (the 1st) clouds moving in nearly opposite directions at the same time, from S. E. to N. W. and N. W. to S. E., which of itself was a good storm sign. At night the stars twinkled with an

Diagram No. 6.



unusual brilliancy even down close to the horizon, which fact most of us know to be a treacherous indication of fair weather, to say the least, as

¹ I have an attack to-day, January 11, 1876, which is exactly parallel to this case, high barometer and N. W. winds, cloudy and blustering.

the very brilliancy of twinkle is due to an increasing moisture in the atmosphere.

On these casual observations, and at the same time noticing an unusually brilliant halo about the street lights, I confidently predicted for the 2d, or by furthest for the 3d, a storm, particularly as my neuralgia continued firm. These anticipations seem to have been confirmed by the Signal Bureau; for by the prediction given by the 1 A. M. report of the 1st inst., we should have had "increasing cloudiness followed by light rain or snow." So also 7.35 A. M. report of same date substantially confirms the above.

The 1 A. M. report of the 2d predicts "warmer, partly cloudy weather, possibly followed by rain on the middle Atlantic coast." The above predictions of the 1st were confirmed by "warmer weather, easterly winds, and light snows." The possible rain predicted on the 2d was not verified.

In the above described unstable condition of the atmosphere, giving strong indications of a storm for a period of 36 hours, it would seem that the neuralgia requisite was accomplished without the formalities of a fully developed storm. This, I think, will become more apparent as we advance in the month's history of storms.

The Neuralgia of the 5th.—This attack is perfectly normal to the storm indicated in the weather curve which began to develop on the morning of the 5th.

The Neuralgia of the 8th.—This did not commence until storm centre had just passed this meridian on its way east. It is not unusual for the neuralgia to lag a little behind the advance of the storm.

The Neuralgia of the 11th.—This attack commenced when the storm-centre was about south of Lake Huron. The cloud and rain points of the 12th and 13th and the morning of the 14th (see weather curve) are but oscillations of this same storm.

The Neuralgia of the 15th.—The attack commenced when the centre of low depression was north of Lake Huron. The storm was first observed here at 1 P. M. of the 15th by the appearance of heavy stratus clouds forming in the southern horizon. These stripes of stratus clouds passed to the N. E., followed by a dark screen of cloud completely obscuring the sky by 5 P. M. At 7 P. M. the neuralgia commenced, and at 7.30 P. M. it began to snow. There was a lull in this attack from 2 A. M. of the 16th, lasting 12 hours; then it renewed its strength at 2 P. M., passing off at 11.30 P. M. As will be seen by the weather curve, there were three oscillations to this storm. The centre of this storm during the second oscillation, according to the daily Signal Bureau maps, moved further north, and it was during this period that the lull occurred in the neuralgia. This attack of neuralgia was clearly anticipated the moment I observed the certain stratus stripe indications of the storm at 1 P. M. of the 15th.

The Neuralgia of the 19th.—This attack commenced at 6 P. M., preceded by a slight burning in the small toes. The day (19th) was perfectly clear, with a good N. W. wind, a rising barometer, and a heavy cold polar current hugging the surface. With these favourable conditions for fair weather I was a little surprised at the attack, and was led to a cautious observance of the sky and wind. At 10.30 P. M. (on the 19th) the wind became less strong from the north, and I thought the temperature was falling less rapidly. At 12 P. M. I again observed and found the wind blowing in spurts, and from every point of the compass. From

this I suspected the general direction of the wind was shifting, and most probably southerly, and that on the morrow the temperature would rise, with a probable fall of the barometer; that the tropical current would attempt to replace the polar with its zero temperature, and that we must look out for the first clouds of the coming storm in the *northern* horizon. After rising on the morning of the 20th, I at once observed in the N. E. quadrant the thin hazy stripe of stratus at an angle of about 25° above the horizon. Stripes of similar clouds appeared succeeding, and all moved to the S. W., followed closely by the heavy hazy screen of cloud, when, by 5 P. M., the whole sky was covered. The wind was now fixed from the S. W. quadrant, and there was every appearance of a coming storm. As shown by the weather curve the clouds somewhat broke away on the night of the 20th and morning of the 21st, without having brought rain, although we had passed through every phase of a storm except precipitation. It was what meteorologists call a "dry storm." This "dry storm" was followed by an oscillation of its centre to the north, but at no time did the clouds entirely descend below the northern horizon until two more oscillations (see weather curve) to the south had taken place, each being a repetition of the first, except that they brought rain—the latter the more. These three points on the weather curve of the 20th and 21st are but oscillations of the same storm. The regular neuralgia preceded the storm as usual, and, in addition, each oscillation was preceded by a slight burning in the small toes. It cleared off beautifully on the morning of the 22d with a N. W. wind.

The Neuralgia of the 22d.—During the afternoon and evening of the 22d the wind was variable, and seemed to be shifting southerly. At 5.30 P. M. the attack of neuralgia commenced, and at 11 o'clock P. M. I again observed the weather; the sky was perfectly clear, and the wind moving slightly but steadily from the south. With the neuralgia continuing in full force, I at once felt that the familiar introductory storm-clouds would probably appear somewhere in the northern horizon on the next morning, most likely in the N. E. At 7.30 A. M. (on the 23d) on rising, I at once peered into the northern horizon, and not a cloud could be seen, but still I did not despair, notwithstanding the neuralgia had already disappeared. At 9 A. M., an hour and a half later, on my way to the office, I could get a distant view up the river, and low down on the northern horizon I could just detect the long hazy stripe of stratus I looked for at 7.30. This was the first advance of the coming storm, and in the mean time the wind was increasing from the south. By 11.30 A. M. the line of cloud of 9 A. M. had advanced as a cumulo-stratus with a light cirrus at a much greater elevation, to an angle of 45° above the horizon, with every prospect of a fulfilment of the 1 A. M. (morning of the 23d) Signal Bureau prediction, which forecast "increasing south and west winds, cloudy weather, with rain and lower pressure." It will be seen by the weather curve that neither the Bureau nor my neuralgia were rewarded, except by a "dry storm," and it was not until the next day (the 24th) by a return oscillation of the same storm that we received our just remuneration, a *rain*. The oscillation, as before, was attended by a burning in the small toes. On the night of the 24th the wind shifted northerly, with clearing weather and rising barometer on the 25th.

The Neuralgia of the 25th.—The wind during the night of the 25th and morning of the 26th shifted southerly. The morning of the 26th

brought the strongly marked bands of stratus clouds well defined in the N. E. At 10.30 A. M. the neuralgia attacked some five or six hours after the storm had begun to form. The storm continued forming in the N. E. toward the S. W., against an increasing southerly wind, and by 6 P. M. the rain began to fall. The neuralgia continued until 5 A. M. of the 27th, and in a few hours afterwards the whole body of cloud lifted in the northern horizon, and breaking into cumulus clouds, moved off in majestic order to the south, under the influence of a northerly wind.

A storm formed early in the morning of the 28th in the N. E., and went through the usual phases up to precipitation. There was no regular neuralgic warning of this storm. It was only heralded by an unusually strong burning in the small toes, which commenced about seven hours before the rain. It will be seen by the weather curve that the rain was exceedingly light, with not a strong depression in the barometer.

The 1 A. M. report (of the 28th) of the Signal Bureau forecast "clear, cooler, followed by warmer weather;" but before they published the 10.30 A. M. report, a "slight depression on the Atlantic coast" had been discovered, and in consequence "rain or snow" was predicted. We ascribe the above "burning in toes" to the disturbance caused by the "slight depression on the coast," which was not sufficiently great to produce stronger and regular neuralgia.

The Neuralgia of the 29th.—The atmosphere continues, as yesterday, in a state of almost stable equilibrium, with hardly a perceptible movement of the atmosphere. Fog and clouds completely obscure the sky. The atmosphere, so to speak, is water-logged, with a comparatively uniform high barometer all over the United States east of the 95th meridian of longitude. There seems to be no low barometer in this whole area to answer the purposes of an atmospheric chimney by establishing the upward and consequently horizontal centripetal currents, and therefore there can be but little disturbance. This condition of the atmosphere which continued till the morning of the 31st with little change in barometer or temperature, affords an opportunity for expressing our belief that it is not the actual moist condition of the atmosphere that causes neuralgia (mine) but it is *atmospheric change*—a want of equilibrium in it. But of course this will bring moisture or rain, which therefore would be an effect of a common cause.

The relations of pain to the states of atmospheric pressure are in this case apparently definite and nearly constant.

Thus we find that when, the atmospheric pressure lessening, the mercury falls, there is apt to occur during the fall, and before it is complete, an attack of neuralgic pain or of burning in the lost foot, and that this is most likely to take place when the lessening pressure culminates in rain. In some months, as in September and October, 1875, this is most constant, indeed almost invariable, so that, at all events in the present case, a falling barometer followed by rain as a rule insures an onset of pain. To this law there are exceptions, readily seen on the diagrams, and some of which are admirably and clearly commented on and explained in Capt. C.'s comments upon the records of the various months, and which I think best to print unaltered.

NOTES ON NEURALGIA FOR SEPTEMBER, 1876, Diagrams 7 and 8.—*Neuralgia of the 2d and 3d* corresponds to disturbance caused by barometric depression marked I. on the map (Diagram No. 8). "This storm," says the *Weather Review* for this month, "was three days in reaching the coast. The rain-belt attending this depression extended from the Missouri Valley eastward over the northern portion of New England and the Middle States during the 2d, 3d, 4th, and 5th. As the storm approached the Atlantic the gradients (of the barometer) increased." It is due to this last fact, I think, that the attack of the 2d was renewed on the 3d. A burning on the outside of the foot filled up the gap between the attacks of the regular neuralgia in the ball of the foot.

Diagram No. 7.

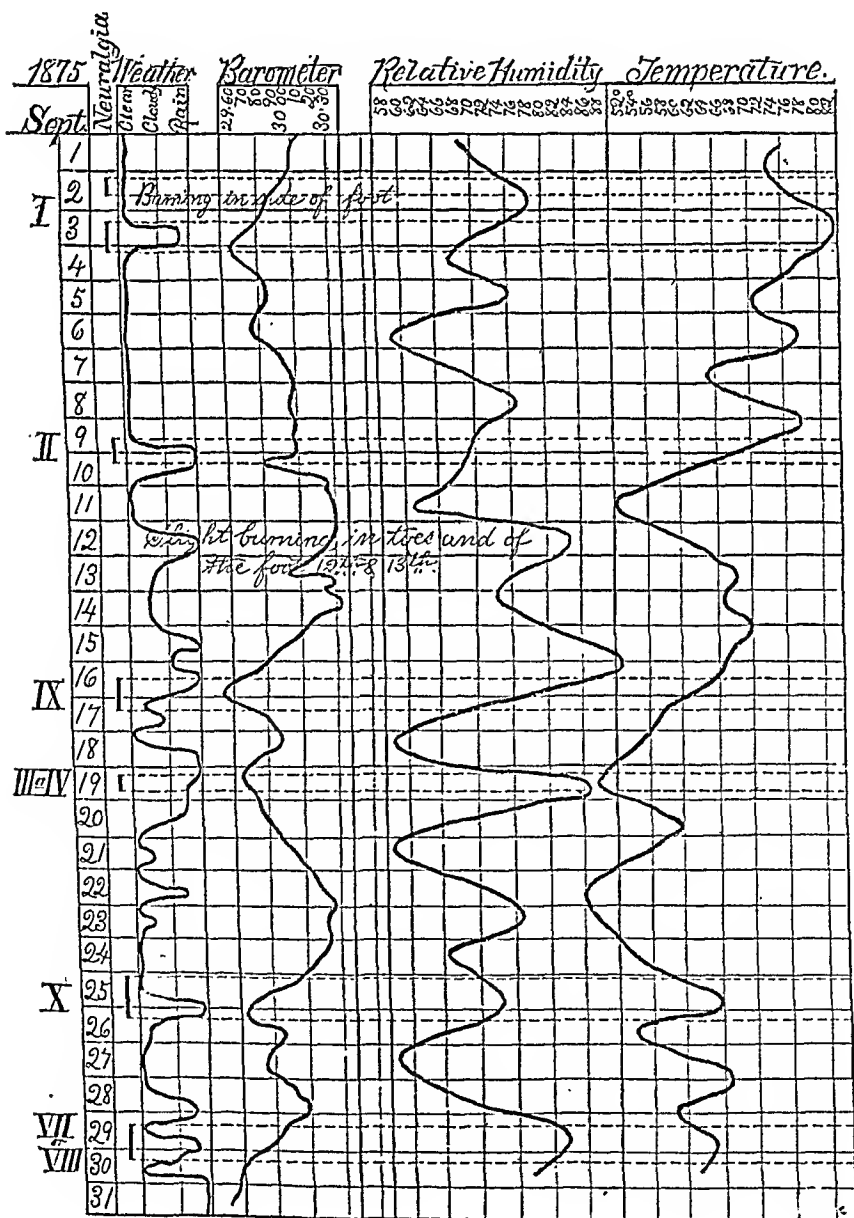
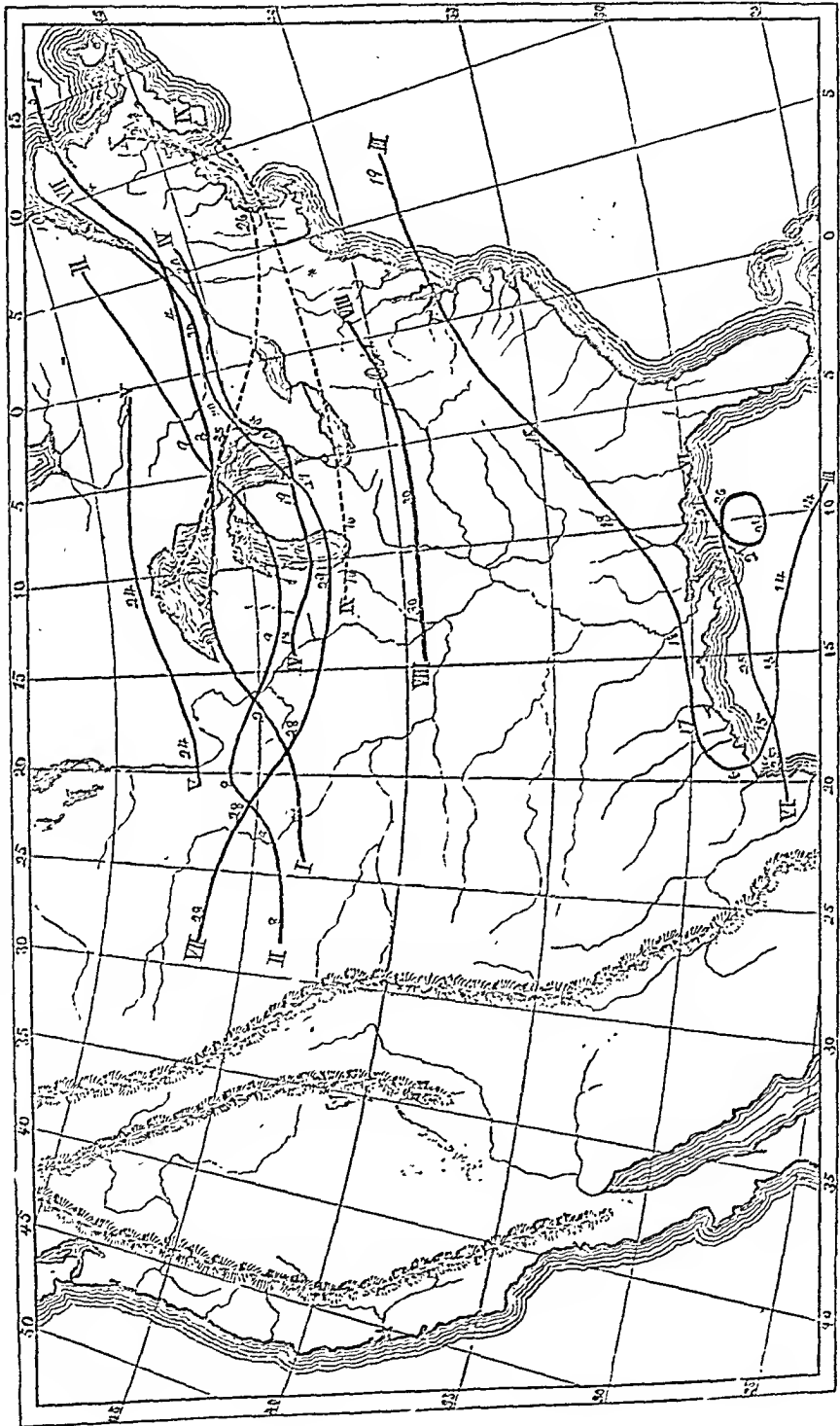


Diagram No. 8—Storm Map for September, 1875.



It will be observed by the weather course that there was actually no rain at this locality. We may here remark that neuralgia is not directly proportioned to the *quantity* of rainfall, but simply seems to be an index of certain conditions, such as low barometer, etc., which generally precede rain, snow, or increase of moisture.

The Neuralgia of the 9th and 10th corresponds regularly to depression marked II. on the map.

The slight burning Neuralgia in the small toes of the 12th and 13th does not correspond to any well-defined centre of depression, but as shown by the curves there was a rapid fall and rise of the barometer accompanied by rain. This was quite local in all probability, as no such depression is indicated in the tri-daily reports of Signal Service for these dates, and no rain was predicted.

The Neuralgia of the 16th and 17th corresponds to depression marked IX. on map.

The Neuralgia of the 19th corresponds to depressions marked III. or IV. on map. It will be seen that they passed near the same dates. It is probable, however, that III. had little to do with it, as it had nearly expended its force before coming within neuralgic distance.

The Neuralgia of the 25th and 26th perfectly normal, and corresponds to depression marked X. on map.

The Neuralgia of the 29th and 30th corresponds to depressions marked VII. or VIII. or both, as will be seen by their dates on map.

Depressions marked V. and VI. on the map were entirely beyond neuralgic range, and were not felt. The former produced no effect this side of Lake Huron.

NOTES ON THE NEURALGIA FOR OCTOBER, 1875, Diagrams Nos. 9 and 10.—*The Neuralgia of the 3d* corresponds to depression I. on map. The rain-belt of this depression was almost entirely north of its centre.

The Neuralgia of the 6th corresponds normally to depression II. on map.

The Neuralgia of the 9th corresponds regularly to depression III. on map.

The Neuralgia of the 14th corresponds to depression IV. or V. on map, but it is difficult upon which to fix the responsibility, as their dates and centres brought each within neuralgic range. It was probably V. that caused the extreme barometric depression as seen by the curve.

The Neuralgia of the 17th corresponds to depression VI. on map, which depression very much diminished as it neared the coast, and as will be seen by the curve, was slight at this locality, being greatest on the morning of the 18th.

The Neuralgia of the 20th does not seem to belong to any well-defined centre of depression; but in conjunction with the movement of a high barometer from Dakota on the 18th, 19th, and 20th to the Gulf and S. Atlantic States, a low barometer was felt along the 45th parallel of latitude, more especially from the 19th to the 21st as is shown by the curve, which also agrees with the tri-daily report of the Signal Bureau. This depression caused showers along the Atlantic coast, but as shown by weather curve there was no rain here. Still there was very warm, hazy weather, and on the 20th were observable wind-clouds and a cirro-stratus (mackerel) sky in the evening. The neuralgia of the 20th I ascribe to the above-described depression whose centre if well defined lay beyond and north of the Signal Bureau Stations.

The Neuralgia of the 24th corresponds to depression VII. on map.

The burning Neuralgia of the 27th in small toes corresponds to depression marked VIII. on map. It is difficult to explain why this storm did not announce its presence by the usual neuralgia. It may be well, however, to observe that the first half of the course of this depression lay in a direction nearly perpendicular to the usual course of storm axes and its distance was rather remote, particularly as we were kept on the prolongation of the shorter axis.

The Neuralgia of the 29th corresponds to the depression IX. on map. Depression X. "is an offshoot" of IX., and they may, neuralgically speaking, be regarded as one.

Diagram No. 9.

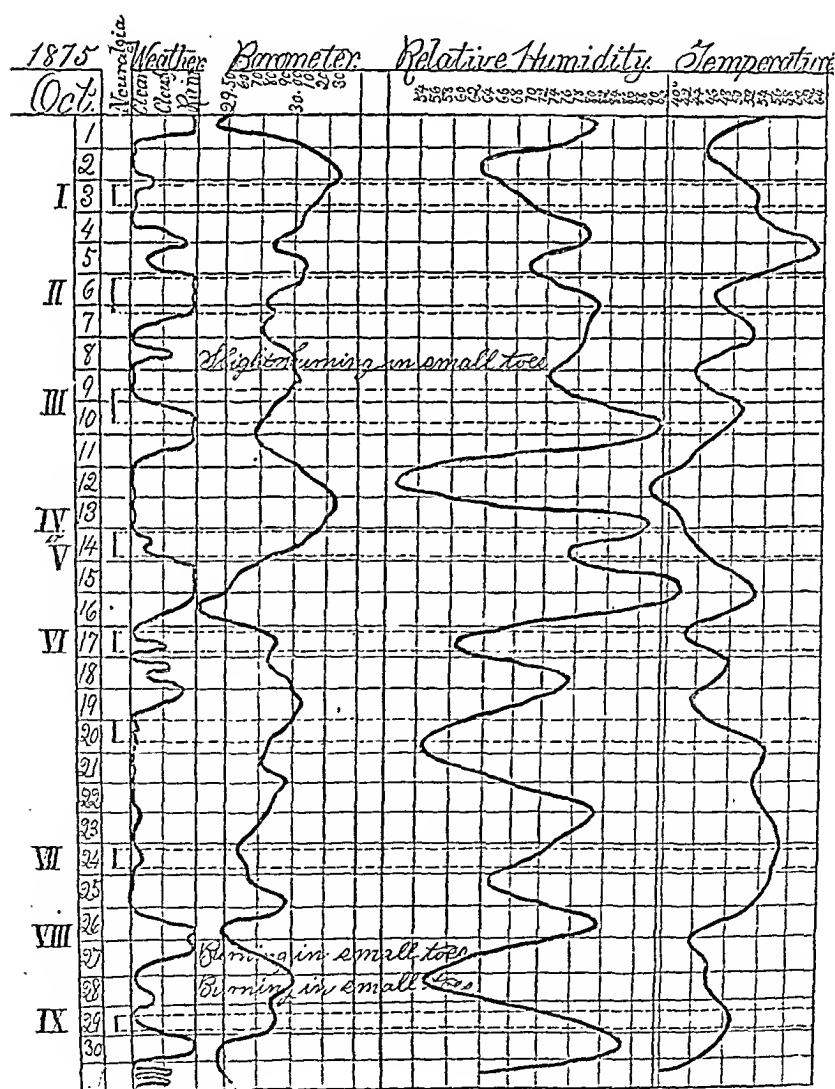
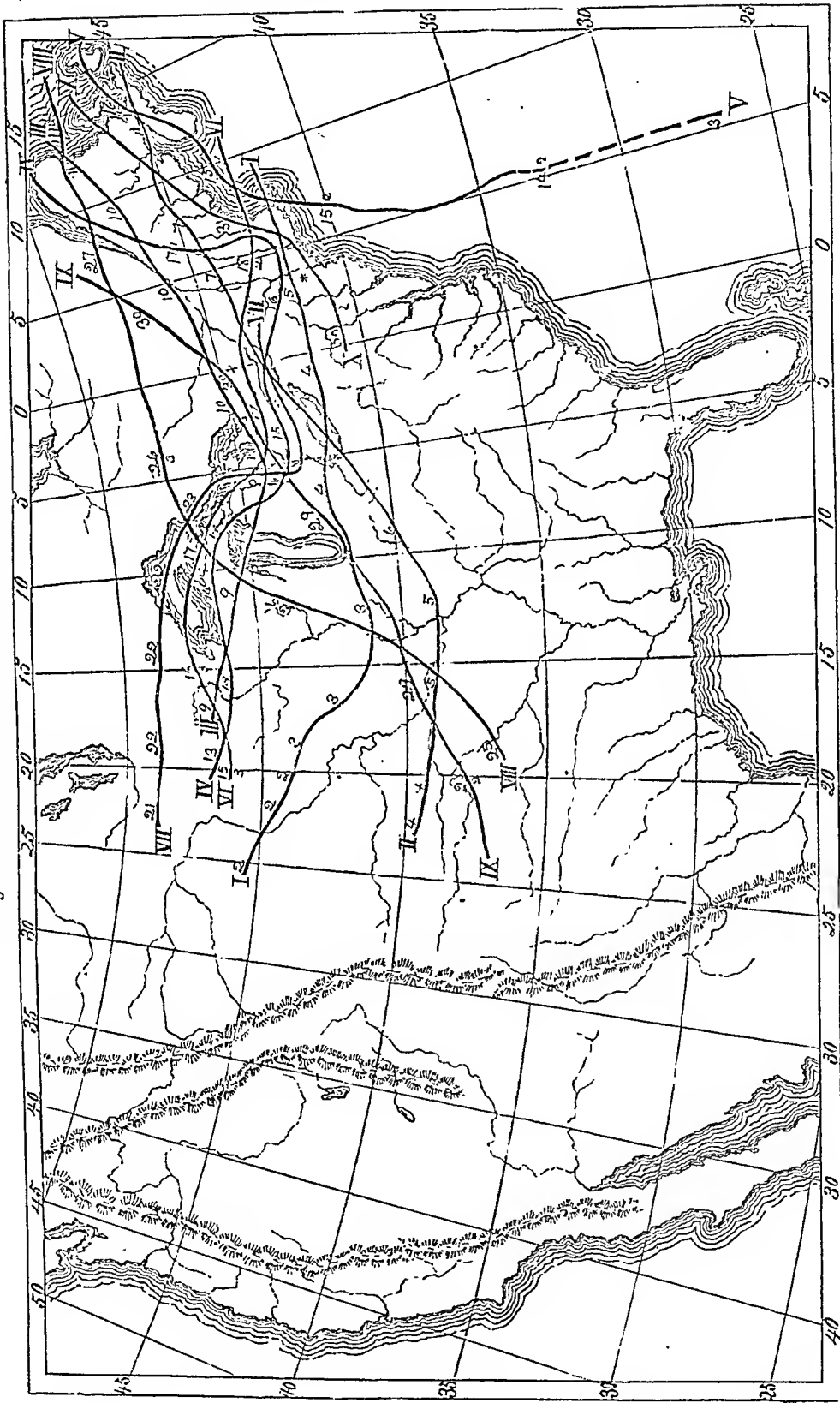


Diagram No. 10.—Storm Map for October, 1875.



By an examination of the dates on the storm-centres as given on the maps, and the hour of commencement of each neuralgic attack, it will be seen that the attack for September 2d was felt 1050 miles in advance of storm-centre; that of the 9th, 500 miles; that of the 16th, 440 miles; that of the 19th, 630 miles; that of the 25th, 450 miles; that of the 29th, 450 miles.

For October. That of the 3d, 950 miles; that of the 6th, 500 miles; that of the 9th, 960 miles; that of the 14th, 780 miles; that of the 17th, 720 miles; that of the 24th, 540 miles; that of the 29th, 720 miles. For the two months we hence find the average distance to be 668 miles.

ON THE DIAGRAMS FOR SEPTEMBER AND OCTOBER, 1875.—If we regard the neuralgic attack of the 2d and 3d of Sept. as one, for they were closely connected, we have for the two months fourteen attacks of the *regular* neuralgia, and two of that of the small toes. Six in September and eight in October, or 105 hours for the latter. For the two months there were eleven storms accompanied by rain; September 9, 12, 16, 18, 25, and 30th (15th and 16th same storm); October 6, 10, 15, 26, and 30th. The storm of October 1st is simply the latter part of the September storm. For these eleven storms we have recorded an accompanying *regular* neuralgia except for two storms, respectively of September 12th and October 26th, which were only accompanied by a burning neuralgia in the small toes. There are, then, remaining the neuralgic attacks of September 2d and 3d, and October 3d, 17th, 20th, and 24th to be considered.

For the attack of September 2d and 3d the barometer was falling and a storm forming on the 3d (see weather curve), and by a reference to the weather map for this month it will be seen that the storm-line marked "I." and its history as given by the Monthly Report of the Signal Bureau, precipitated heavy rains in the first part of its course and light rains through the Lake region, northern part of the Middle States, and New England. Although the barometer fell to a pretty low figure at this locality, there was no rain, and by reference to the humidity curve no high degree of moisture in the atmosphere.

For the attack of October 3d the conditions are very similar to those described above for September 2d and 3d in barometer and humidity. We find the true cause, however, in the disturbance caused by the storm-line marked "I." on the October map, and which although its centre passed within seventy-five miles of this locality, the great rain-belt of the depression lay further north on the lakes in New England and the St. Lawrence Valley. The nearest approach to rain here is shown by the weather-curve during the latter half of the 4th instant. The burning in small toes of the 8th instant was probably due to a local disturbance.

For the attack of the 17th (Oct.) we have the storm marked "VI." on the map, which caused only the slight depression on the 18th as seen in the barometric curve. The peculiarity of this disturbance is, that in moving from Michigan to Massachusetts the centre of depression grew less marked as it moved east; the neuralgia, as usual, preceded the lowest depression some six hundred or seven hundred miles, and at the actual time of the neuralgia the depression of the storm-centre was 29.50 instead of 29.90 as necessarily recorded by our curve which can only recognize the storm during its actual passage of this meridian. This depression carried rain along the lakes and threatening weather here, as shown by the weather curve. This is, as in the last case and in the one following, an instance where the neuralgic area overlaps the rain area about the same

storm-centre, and demonstrates that a storm may bear the fruits of rain on one side of its path, and on the other, and perhaps on both, may be capable of producing neuralgia.

For the attack of the 20th we have no well-defined storm development within the limits of the United States to account for it, but by an examination of the daily maps of the Signal Bureau we find a low barometer on the Upper Lakes on the 20th, and in New Brunswick on the 21st with a high barometer along the 35th parallel of latitude with its centre reaching from Memphis to Richmond. We were consequently situated midway between the high and low barometer, and of course with the general direction of the wind to the north. The barometric gradients were not steep, but sufficiently so to cause cloudy and threatening weather over much of the intermediate area, and rains were reported from the Lower Lakes and Upper St. Lawrence Valley. The centre of this storm or disturbance lay beyond the reach of the Signal Bureau, but I think there can be no doubt but that one passed through the Upper Canadas.

The history of the neuralgia of the 24th would be but a repetition of that described for the 17th, its storm centre being No. "VII." on the map.

We have, I think, shown from the foregoing that *every* attack of neuralgia seems to be connected with some storm movement, or some unusual atmospheric disturbance as exhibited by the curves and maps, or described as only apparent exceptions, and that *every* storm which passed this side of Lake Superior, or north of the 35th parallel of latitude, could appropriately be arraigned for its connection with neuralgia.

With regard to the barometric curve in its direct relation to the neuralgic periods, it is noticeable that every attack of pain for the two months occurred on the falling or low barometer, or as in the case of October 29, immediately preceding a fall. And what we have found true here in these two months may be laid down as generally true with the single exception; where we have discovered in rare cases, neuralgia accompanying a high barometer *with storm conditions*. By some these high barometer storms have been called "anti-cyclones," but it is not necessary here to consider these exceptional cases.

In viewing this curve too, this apparent anomaly is striking: that at times with marked, sudden, and decided falls in the barometer the pain seems no greater nor endures longer than in the slighter depressions. This I explain by arguing that the disturbing cause of neuralgia may be as potent well up on the side of the barometric basin of depression, where the barometer is comparatively high, and the gradients steeper (which steepness is, after all, the best measure of disturbance), as at the very centre of depression itself. Indeed, I have on more than one occasion observed at this locality a high barometer invaded by an advancing low barometer storm, and after the reports were recorded found myself with neuralgia very nearly on the superior edge of the storm basin under a pressure of thirty inches, which would be the reading of the depression in the curve corresponding to the attacking of neuralgia. In these particular cases noted, however, the neuralgia was not quite of its usual strength. So, whether we are at the bottom of the basin—the centre of the storm—or half-way up the side, two hundred or three hundred miles from the centre, the effect, neuralgically speaking, would be about the same, while obviously the curve could not serve to measure each case equally well, and hence a minor depression in curve *may* be the measure of as great a disturbance as a more marked depression.

With the above considerations it would seem that there may be a much clearer connection between pressure, or something of which it is the measure, and neuralgia than at first we would be led to suspect.

As to the *humidity* curve there seems to be a general parallelism between it and the temperature curve, but I do not perceive that it has any *direct* bearing on the neuralgia. And as for the *temperature* curve itself all we can say is, that it rises as the barometer falls, and falls as the barometer rises.

I add here, as their fitting place, certain *conclusions* in regard to his case in its relations to storm states with which Captain Catlin has favoured me. He says:—

Neuralgic intensity does not seem to be proportional to the *amount* of rain-fall.

At the exterior of a storm disturbance the pain is usually less severe, and indeed at times I have been so far from the disturbed centre as to just perceptibly feel it.

A storm reinforced by another at an angle of say 90° , producing greater eccentricities in the curves, does not seem to produce a corresponding intensity or duration of the neuralgia. He adds: I am unable to state at what point within the disturbed area the pain would be strongest.

The abruptness of the barometric fall does not seem to have much to do with the causing of pain, nor is the length of attack dependent as it seems on the length of the storm.

I have stated on the last page that the pain in this case seems to bear a certain relation to lessened pressure. In those who come suddenly out of the increased air-pressure of diving bells or sub-aqueous chambers, there is said to be a liability to pains in the limbs, and Dr. B. W. Richardson seems to think the experiment thus made valuable as illustrating the influence of lessened pressure accompanying weather changes. The greater abruptness and the excess of difference in the former case seems to me, however, to be something very different from the gradual alteration of pressure in the latter case. In fact, translation of neuralgic cases to high altitudes does not seem to give rise to pain, nor is neuralgia in upper regions so very prevalent as it is apt to be on lower levels.

Increased humidity is a condition which nearly always comes with storm states, and accompanies them whether the barometer be falling, as is then usual, or low, or whether the barometer, as in some rare storms, be steady or high and steady. I think then that an atmosphere surcharged with moisture may be looked upon as the next most favourable single condition for the product of neuralgia.

• Apart from these outside conditions of weather which we may conceive of as influencing us by checking or increasing perspiration, and lessening surface pressure, or altering the amount of oxygen inspired and carbonic acid thrown out, there are no doubt personal elements in the equation which are more or less mysterious, and which must be taken to account for

a certain number of the neuralgic fits which do not seem to have perfect relations to causal weather states. Moreover it is conceivable that as we are changeful instruments, the body may be sometimes more liable to respond by pain to conditions of weather favourable to its production.

The human economy is arranged by nature to have, as it were, a climate of its own, with very permanent states as to temperature, humidity, electric conditions, and the like; but all of these are subject to variations, some of them natural, and, so to speak, rhythmic and chronic; others more or less irregular. As they are part of the functional activities of the body, so do they, of necessity, enter into every consideration of the causation of pain.

While, however, we may feel sure that they are thus active, their precise relations to the existence or to the favouring of the birth of pain are too uncertain for us to do more than surmise that they sometimes obscure or interfere with or prevent the positive effects of external climatic states in this direction.

Any lowering cause, such as dyspepsia, overwork, and anæmia, however brought about, is apt to increase this sensitiveness to barometric changes; and so every enfeebling agency, as it were, tunes a man's nerves up to the capacity of producing pain, when once there exists a permanent cause in the way of neural disease.

As an illustration, I know of an army officer who is the subject of stump-neuralgia which is very prone to show when a storm is imminent, but his liability is at the maximum in the spring and fall, when he is prone to feel the depressing influence of an old ague-poisoning, and when this is mastered the weather loses its influence.

A large number of neuralgic attacks seem to be definitely related to those perturbations of atmosphere which we know as storms.

The separate factors of storms, such as lessened pressure, rising temperature, greater humidity, winds, appear, as a rule, to be incompetent when acting singly to give rise to attacks of pain.

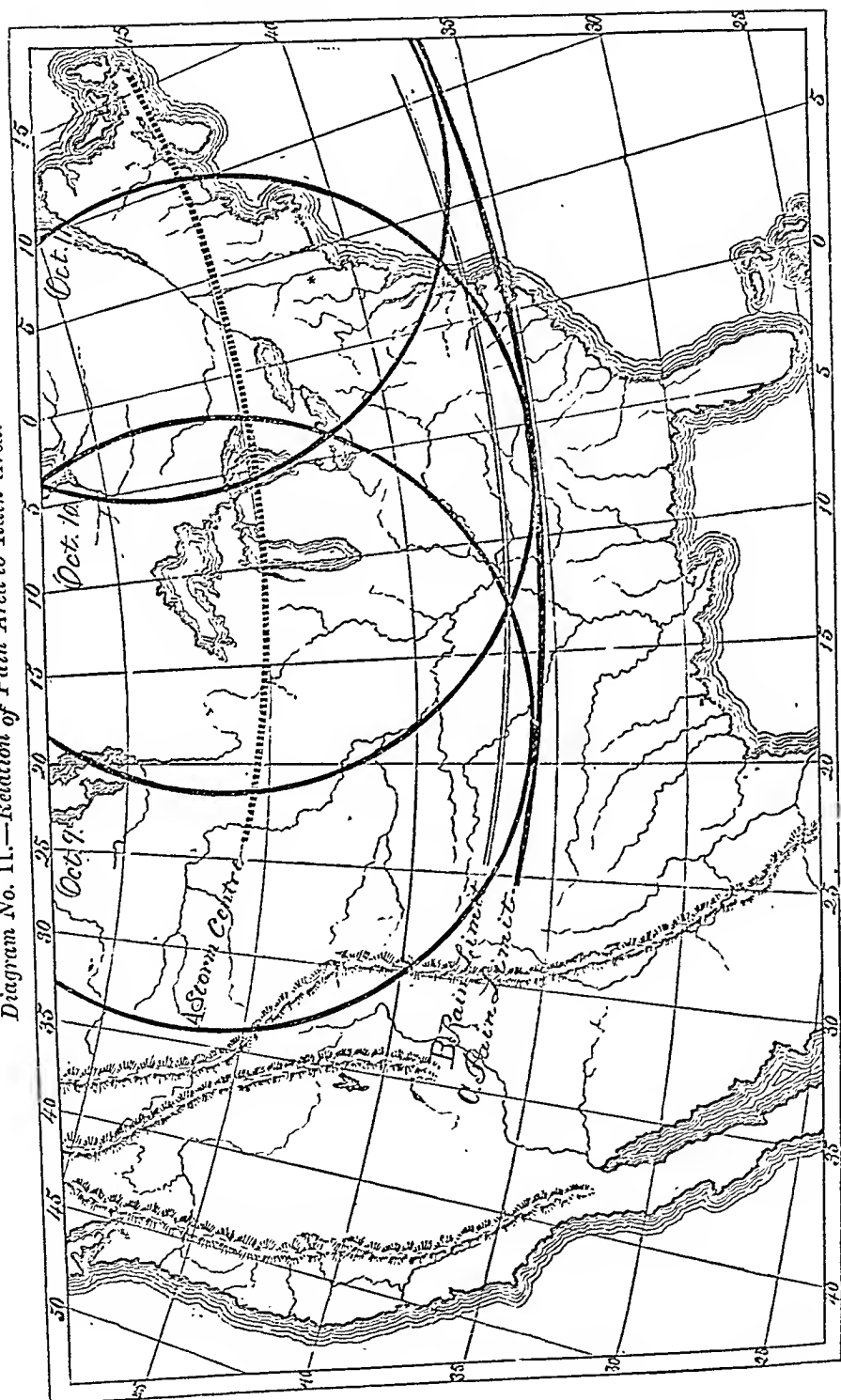
Either, then, it is the combination which works the mischief, or else there is, in times of storms, some as yet unknown agency productive of evil.

Such an agent may be either electricity or magnetism.

As concerns the former, we have failed to study its relations to pain, because of difficulties as to instruments and methods of research, difficulties which may, I trust, be overcome.

Neither, as I said, have any observations been made as yet as to the influence of magnetism for want of proper instruments, and this is the more to be regretted because of the following facts. In 1867 and 1868 the aurora borealis was frequent and remarkably brilliant, and Captain Catlin then had it most forcibly called to his attention that the neuralgia was apt to prevail when the northern lights were intense. This may be due

Diagram No. 11.—Relation of Pain Area to Rain Area.



to magnetie or electrie disturbanee, bnt also it may be owing to the fact that an intense aurora is apt to be followed by a storm, indeed is almost sure to be, if we may trust the recent observations of Lient. Weyprecht of the Austrian Polar Expedition; also it is a common belief among our northern Indian tribes. The pain, then, which followed the northern light may be merely an ordinary storm-pain; but the question deserves a more exact answer.

There seems, then, to be every reason to believe that the popular view which relates some pain fits to storms has a distinct foundation, and, as we have seen, it has stood the test in this single case of a long and patient scientific study. At the same time we have failed to detect the single element of mischief, and are thus far driven to believe that it is the combination of atmospheric conditions which starts the pain into being.

A still more valuable and novel conclusion has arisen out of our study. Every storm, as it sweeps across the continent, consists of a vast rain area, at the centre of which is a moving space of greatest barometric depression, known as the storm-centre, along which the storm moves like a bead on a thread. The rain usually precedes this by 550 to 600 miles, but before and around the rain lies a belt, which may be called the neuralgic margin of the storm, and which precedes the rain about 150 miles. This fact is very deceptive, because the sufferer may be on the far edge of the storm-basin of barometric depression, and seeing nothing of the rain, yet have pain due to the storm. (Diagram No. 11.)

It is somewhat interesting to figure to one's self thus—a moving area of rain girdled by a neuralgic belt 150 miles wide, within which, as it sweeps along in advance of the storm, prevail in the hurt and maimed limbs of men, and in tender nerves and rheumatic joints, renewed torments called into existence by the stir and perturbation of the elements.

I give (Fig. 11) a diagram of one storm with the theoretical rain area as founded on Prof. Loomis's observations, and its neuralgic belt as founded on our own observations.

ART. II.—*Addison's Disease, and its Relations with Anæmiasis (Essential Anæmia)*. By WILLIAM PEPPER, A.M., M.D., Professor of Clinical Medicine in the University of Pennsylvania.

IN the number of this Journal for October, 1875, I gave some account of a rare form of disease, under the name of "progressive pernicious anæmia." I endeavoured to show that this affection, which has lately been made the subject of numerous interesting memoirs, is identical with the "idiopathic," or "essential" anæmia of Addison. Attention was also drawn to the

remarkable resemblance between the chief symptoms of progressive pernicious anæmia, and of some forms of leukæmia and pseudo-leukæmia; and also to the fact, as appeared from one of the cases reported at length (Case No. III. p. 325), that there is a lesion of the marrow of the bones in the former disease similar to that which has now been repeatedly found in the latter affections. I ventured, therefore, to suggest the view that the progressive pernicious anæmia of recent writers may be, in some instances, at least, the medullary form of pseudo-leukæmia; although of course it is necessary that a careful examination of the marrow in a number of such cases should confirm or refute this opinion before it can be disposed of definitely. Finally, I called attention to the fact that the various accepted forms of leukæmia and pseudo-leukæmia (including progressive pernicious anæmia) are so much alike that they can only be distinguished by the varying degrees of increase of the white corpuscles of the blood, and the preponderance of the lesions of the spleen, the lymphatic glands, or the marrow; and that they are all associated with lesions of the blood-making tissues, and are especially characterized by a profound alteration of the blood-making function (hæmatisis). Consequently I suggested the name of anæmatisis (a privative; *αἰματός*, elaboration of blood), signifying impairment, defect, or *disease of the blood-making function*, for this entire class of affections, specifying their various forms by the terms *splenic*, *lymphatic*, and *medullary*.

I have recapitulated these points, in order to bring the consideration of another interesting affection, Addison's disease, more directly into connection with the study of these cachexiæ. The affection known as Addison's disease is one about whose nature and pathology many different views have been, and still are held. Besides the above name, given to it in honour of the first describer, it has been called the bronze disease, supra-renal cachexia, melanopathia, *asthénie sur-rénale*, and *melanodermie asthénique*. These and other names, of themselves indicate our ignorance of the true nature of this disease, and the attempt to designate it merely by naming some of its chief symptoms.

It is undoubtedly a rare disease in America, and but few complete cases have been placed on record in our journals. In the number of this Journal for January of the present year (p. 75), I have published a detailed account of a typical case of Addison's disease, to which reference will occasionally be made in this article. I shall refer to it as the case of Mr. C. L. So soon as I met with cases of so-called progressive pernicious anæmia, or anæmatisis, I was struck by the numerous analogies presented by their symptoms and course with those of Addison's disease; and in consequence, I awaited anxiously the publication of reports of cases of the latter affection, in which microscopical examination of the marrow of the bones should have been made. But as no such examinations have yet, to my knowledge, been made, the following cases and remarks, in connection with the

case above referred to, are offered as a contribution to the clinical study of this interesting question. No attempt will be made to present a complete historical sketch of Addison's disease, and it will be necessary to avoid even a passing allusion to most of the interesting memoirs lately published on this subject. Nor will it be possible in the limits assigned to this article to present all the arguments for and against the various theories which have been advanced, as to the nature and pathology of Addison's disease. The object is rather to present a broad sketch of the leading characteristics of the affection, and then to bring them into comparison with the symptoms of certain other conditions. In discussing questions of so much difficulty as that upon which we are now writing, it is peculiarly important to avoid preconceived opinions, or hasty conclusions; and, in offering some considerations which appear to favour a view of Addison's disease different from that which is generally adopted, the hope is merely entertained that they will seem of sufficient value to receive attention from future investigators of these important subjects.

It would occupy too much space to quote in full the classical description which Addison first gave in 1855, and to which scarcely anything has been added by subsequent writers; but the following brief summary, which he gives, of the leading and characteristic features¹—"anæmia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change of colour in the skin," will show the identity of the case of Mr. C. L. with the morbid state which Addison was the first to connect with diseases of the supra-renal capsules.

As, however, a certain degree of irregularity is frequently to be observed in the development of the symptoms or in the course of the affection, it is necessary to discuss its principal features more in detail.

Mode of Origin. Early Symptoms.—As a general rule in this, as in other cachectic conditions, the appearance of the symptoms is so insidious that the patient can rarely refer to any particular date or occurrence as marking the beginning of the disease. Occasionally, however, it seems to be more abrupt in its development, and to run a more acute course. In these cases, which occur especially in young persons, the lesions generally show that latent disease of the supra-renal capsules has been progressing for an uncertain length of time, and that the constitutional symptoms have been quite suddenly developed in their full form. In most cases, the earliest symptoms complained of by the patient are slowly-increasing debility and loss of energy. It may be that dull, deep-seated pain in the loins has been noticed for some time previously; thus Mr. C. L. had observed, for a considerable time before the development of the characteristic symptoms, that

¹ On the Constitutional and Local Effects of Disease of the Supra-renal Capsules; Syd. Soc. Ed. of his works, p. 211.

certain exertions, such as bending or lifting, caused dull pain in the loins. Disturbances of digestion, capricious appetite, nausea, occasional vomiting, may also appear early. The discoloration of the skin, which justly attracts so much attention, very rarely appears as the initial symptom. Among the more rare symptoms, which have been occasionally noted as preceding or accompanying the development of the disease, are transient attacks of jaundice, rheumatoid pains, excessive urination (polyuria), diarrhoea with colourless stools, and marked pulsation of the abdominal aorta, simulating aneurism. After the symptoms are well established, we may note with care the differences which exist in individual cases in regard to the following features :—

Nervous Symptoms.—The muscular debility, to which reference has been already made, ranks first among these, and merits careful study. Frequently the very earliest symptom noticed, it continues throughout the case to be the most remarkable. At first, the patient merely observes that he tires in the performance of his day's work more readily than usual. The debility increases with greater or less rapidity until the patient is barely able to leave his bed, or even to sit up without urgent symptoms of exhaustion. In some cases the disease lasts between two and seven years before it reaches this extreme degree; in others, it is attained in the course of as many months. In some instances, so rapid and sudden is the loss of strength that the disease may be mistaken for an attack of typhoid fever; and it will be observed that in the case of Mr. C. L. this mistake was made by the family of the patient. Scarcely ever does it progress continuously; but, as will be observed in a very marked manner in the case which furnishes the basis of this article, from time to time there is a rapid and marked return of strength, so that, for example, a patient who has been barely able to sit up in bed, will soon be strong enough to walk about or even to do light work. This improvement is very deceptive, and as in some cases it lasts a considerable time, it has led to some confusion with regard to the beneficial effects of certain modes of treatment. In almost, if not actually in every case, however, this improvement is but delusive; and, after lasting an uncertain period, is rudely interrupted by some apparently causeless attack which rapidly reduces the patient's strength to a point even lower than at any previous time. When this symptom has become well developed, there may be, even during entire quiet, a profound sense of exhaustion; or, as was noted in Mr. L.'s case (p. 78), there may be an utter loss of desire for exertion or even for movement, a profound lassitude which leads the patient to repose contentedly in perfect quiet day after day. The power of clasping with the hand may seem to be fair, and while the patient is lying down, he may appear to still have considerable strength, but the act of rising to the feet, or even of sitting up, induces rapid and extreme exhaustion. In the case here referred to, the patient, after his debility became advanced, preferred

making no effort to sit up, and when obliged to leave bed in order that the clothes might be changed, would slip down in a minute from the chair where he was placed on to the floor, where he would lie at full length.

It appears to me that the characters of this excessive debility are best explained by the view that it is dependent upon an anæmic state of the nerve centres, associated with great enfeeblement of the heart's action.

Months before the fatal result of the case, and when perhaps the patient will still rally several times and become able to make considerable exertion, we meet with a degree of muscular weakness scarcely equalled even in the last stages of any chronic disease. It is more closely approached by the debility described in the cases of "progressive pernicious anæmia" reported in the number of this Journal for October, 1875, than by other condition I know of. In Addison's disease, moreover, as will be hereafter seen, it is probable that (in many cases at least) there is a state of irritation of the abdominal ganglia of the sympathetic or of other nerves which aids, by inhibitory action on the spinal cord, in the production of such intense asthenia.

In addition, it will be noted that Mr. L. complained of a peculiar sense of straining in the joints or muscles when he made any sudden movement.

Other nervous symptoms are occasionally met with, but cannot be ranked among the characteristic features of the disease. Among these may be mentioned convulsions, which sometimes occur shortly before death, or more rarely precede the development of the disease. In the few instances where the latter has occurred, it is difficult to determine what, if any, is the connection.

In other cases numbness or partial anæsthesia, tremors or muscular twitchings have been noticed, but none of these occur with sufficient frequency to make them rank among the symptoms of the disease. They probably depend upon some special minute lesion of the nervous system. The giddiness which is occasionally noticed, is probably dependent upon the anæmia and the feeble condition of the systemic circulation.

Digestive Symptoms.—In nearly all cases there are marked disturbances of digestion present. The appetite remains fair for a time, but then grows capricious and irregular or fails in a marked degree. On page 80 (report of Mr. C. L.'s case) will be found a detailed account of some of its peculiarities. Nausea is often present, and in some cases the presence of food in the stomach causes marked distress. Vomiting is scarcely ever absent throughout the course of the disease, but, like the other symptoms, is subject to marked alternations. At times, during the temporary spells of improvement already described, the appetite may become quite good and neither nausea nor vomiting occur. But in a variable time, often without any assignable cause or from some trifling over-exertion or indiscretion in

diet, a severe attack will occur attended with anorexia, nausea and frequent vomiting.

The peculiar irritability of the pharynx and œsophagus described on p. 80 is an unusual symptom.

The condition of the bowels is equally variable. In some cases, diarrhœa, due to follicular enteritis, appears among the earliest symptoms; and has even been ascribed as an occasional cause for the subsequent development of Addison's disease. It is true that, in many instances, enlargement of the solitary follicles of the intestine is found, but as a rule the condition of the bowels is one of moderate constipation, with occasional alternations of diarrhœa with thin, serous stools. In Mr. L.'s case these spells of diarrhœa were attended with cutting abdominal pain and great nervous restlessness, agitation, and prostration.

The abdomen is usually rather retracted; and may be indolent throughout the case, while, on the other hand, tenderness of quite marked character may be present. In Mr. L.'s case this was found at the epigastrium, and was associated with unusually great reflex irritability of the abdominal muscles. There is no alteration in the size of the liver, but a slight degree of enlargement of the spleen is generally present.

The *urine* presents no characteristic changes. It has been found to be excessive in some cases, but usually it continues normal or even reduced in quantity. It is reported to be frequently of low specific gravity and deficient in solid ingredients. It never contains albumen unless there be coincident organic disease of the kidneys.

Respiratory Symptoms.—In uncomplicated cases of Addison's disease the only symptom connected with the lungs is dyspnœa on exertion, resulting from the conjoint effect of anæmia and debility. This is at least true of the early period of the disease, though later it is quite common to note the appearance of cough with slight muco-purulent sputa, and the physical signs at the apex of one or both lungs of tuberculous(?) disease, of limited extent. In the case here reported, no dyspnœa was noticed until towards the close, when debility was extreme and a small degree of pulmonary disease had occurred.

The *circulatory system* furnishes much more important symptoms. The heart's action is feeble, and the pulse is very small and weak. During quiet it may rise but very little above the usual rate; but even slight exertion accelerates it and is apt to bring on palpitation. During the paroxysmal exacerbations of the disease, the pulse is usually much disturbed, becoming more rapid, 100 to 120, and at the same time extremely small, thread-like, and feeble. In the last stages of the disease the pulse is apt to be accelerated, but in some cases it is unusually slow, as in one reported by Dr. H. Thompson, where it varied from 52 to 60 within a fortnight of the death of the patient.

Cardiac or vascular murmurs of hæmic origin, connected with the

altered condition of the blood, are occasionally detected, but by no means so frequently as might be expected. In neither of the cases I have had the opportunity of carefully studying, were such murmurs present.

Abnormal pulsation of the aorta is present in a large proportion of cases; and its detection is rendered more easy by the retraction of the abdominal walls which often exists. In some cases there has been an apparent dilatation of the vessel (Gerhardt), but, as is well known, this is not an unusual sensation in connection with excessive local pulsation of large arteries.

The *state of the blood* is one of the most important conditions in this disease, and bears directly upon some of the most interesting questions as to its pathology and the nature of the symptoms. Unfortunately, however, the number of careful examinations which have been made is so small, and the results are so indefinite and even contradictory, as to render it very difficult to form a correct opinion as to the condition of this fluid.

Partly in consequence of this we find one of the most able and zealous investigators of the nature and symptoms of Addison's disease, Dr. Greenhow,¹ in his latest publication on the subject, expressing his opinion that the composition of the blood does not undergo any important alteration in uncomplicated cases of this affection. On the other hand, the existence and extreme degree of the anæmia occupied a prominent place in the group of symptoms which Dr. Addison established as characteristic of the disease he first described. It is true that accounts of the condition of the blood very rarely describe it as presenting the thin, watery consistence and light colour so characteristic of anæmia. On the contrary, in a fair proportion of the cases where its condition is referred to at all, the colour and consistency are spoken of as normal, and in one case reported by Greenhow the blood is even described as thicker than natural, with an excess of red globules. Still it must be remembered that these are but superficial means of judging of the blood. I have, in a former article already referred to (in the number of this Journal for October, 1875), spoken of the vague meaning of the term anæmia, and of its utter insufficiency to express all of the important forms of defective constitution of the blood.

It seems to me evident that, though the blood may not present the characters of ordinary anæmia, there must be grave interference with the healthy state of this fluid. In the first place, it appears undoubted that a great reduction in the mass of the blood usually takes place. This is suggested by the appearance of those parts of the surface which are free from the peculiar discoloration which is so characteristic of the disease. Thus the conjunctivæ are pearly white, and the matrix of the nails appears peculiarly white, far more so than could be explained merely by contrast with the surrounding discoloured skin. The marked degree in which this

¹ Med. Times and Gaz., June 12, 1875, p. 630.

appearance exists is shown by the frequency with which such terms as anæmie or chlorotic are used to describe the condition of the patient. Many of the symptoms, as will be further pointed out, seem to indicate and depend upon a deficiency of blood in the vessels. Finally, at the post-mortem examination, there is extremely little blood in the vessels or in the viscera with the exception of the lower part of the lungs and the right cavities of the heart. In the case of Mr. C. L. this decrease in the amount of blood in the vessels and tissues was very marked.

Again, in a great majority of those cases in which microscopic examination of the blood has been made, an excess of white corpuscles has been noted; according to Hayden, it has been detected in every instance where careful examination has been made. In some instances this excess is slight, in others marked; in a case reported by Severini (*Schmidt's Jahrb.* cxlii. p. 111), the white and red corpuscles seemed about equal in number. It has not been determined in what proportion of cases this increase takes place, nor whether it depends upon an actual increase in the number of white corpuscles, or is merely relative and dependent upon a great reduction in the number of the red globules. Possibly here, as is the case in other forms of disease of the blood-making function, both of these conditions may be present; in one set of cases, the element of increased formation of white corpuscles being present, while in another set there is only an apparent increase, due to the deficiency of red globules, which would seem to be more constant. It must not be forgotten that the dark colour of the blood may in part be due to some alteration in character or increase in quantity of its colouring matter.

The *fibrin* of the blood is apparently not greatly decreased, since it is usual to find small clots in the cavities of the heart. In Mr. L.'s case there were such clots, and on expressing the serum which they contained, they presented a peculiar and unusual whiteness.

I know of no instance where a careful analysis of the blood in Addison's disease has been made, but, on the whole, it seems clear to me that there is in this affection a profound interference with the elaboration of the blood, marked by decrease in the amount of blood and of the red globules, with or without actual increase in the proportion of the white corpuscles. If this be so, it would justify the use of the term "*anæmatosis*," which I have suggested for the condition present in the group of diseases comprising leukæmia, pseudo-leukæmia and progressive pernicious anæmia, and would indicate the possibility of further analogies between them and Addison's disease. I shall have occasion to return later to this interesting question.

Hæmorrhages.—Closely connected with the question of the condition of the blood is that of the liability to hæmorrhages which, in Addison's disease, are far from being common. It will be seen, hereafter, that minute extravasations of blood may be found after death in various parts, but

during life the liability to hemorrhages is much less than in some apparently allied diseases, such as progressive pernicious anæmia.

Emaciation usually exists to a slight or moderate degree; but, unless there is some complication of a serious character, there is no such wasting present as is seen in many chronic diseases.

Temperature.—Among the symptoms recorded in some cases, especially in the early stages of those which run a comparatively rapid course (as in a case by Heckford, *Lancet*, March, 1867), are slight rigors with very moderate febrile reaction (100° to 100.5° F.); and occasionally there is slight, irregular fever at intervals during the course of the case. But such cases are, perhaps, the exceptions, and it would seem to be the rule for the temperature to remain normal, or even to show a tendency to fall below the natural standard. In Mr. L.'s case it was never observed above 100° F.; more frequently it varied from 98.5° in the morning to 99.5° in the evening. But at times, when the exacerbations occurred, which we have already described, although the temperature of the trunk did not vary much, the extremities grew very cool, even so far up as the thighs and elbows. The difficulty in maintaining the bodily warmth is shown by this tendency to coolness of the extremities, and, in a very marked manner, by the severe effects of exposure to even moderate cold.

Discoloration of the Skin.—I have postponed until the last the discussion of this symptom, which has erroneously been regarded as the most important and characteristic feature of the disease. It is to this error that very much of the confusion which still surrounds the subject of Addison's disease is due. It is essential, then, that we should endeavour to obtain clear and definite ideas of the character and value of this symptom. In the first place, it is evident from a study of the recorded cases, that the discoloration of the skin is not among the earliest symptoms of the disease, but that the disease of the supra-renal capsules, with the consequent debility and changes in the blood, has often been progressing for an indefinite time—months, or even a year or two—before discoloration of the skin makes its appearance.

Again, it appears that it cannot be regarded as an *essential* symptom, and that there is no definite relation between the degree of discoloration and the development of the general symptoms and the extent of the lesion of the capsules. As a general rule, it is most intense in cases which run a very slow and chronic course. On the other hand, in some cases where the characteristic symptoms were very marked and severe, and the characteristic lesion of the capsules present, it is stated that there was no discoloration at all; and although it is possible that in some of these a slight shade of discoloration may have existed and been overlooked, it appears certain that in others (cases by J. B. S. Jackson, Gull, Niemeyer) it was entirely wanting.

It is probable that the explanation of these instances is that death has

been induced by exceptional individual weakness or unusually severe functional disturbances before time was given for any marked accumulation of pigment.

It is further to be remembered that discoloration of the skin (not always to be distinguished, even by the most careful study, from that which attends Addison's disease of the supra-renal capsules) may be produced by various causes, such as uterine disease, malarial fever, hepatic disease, or cancerous or tuberculous peritonitis. (See Case I.)

Finally, it has been clearly shown that various diseases of the supra-renal capsules, such as cancer, tubercle, or hemorrhage, may occur without the production either of discoloration of the skin or of the characteristic general symptoms; and that it is only one form of disease, viz., chronic inflammation with cheesy degeneration and sclerosis of the capsules, that induces the symptoms recognized by Dr. Addison. (See Case II.)

It is evident, therefore, that it is only by studying the discoloration of the skin in connection with the general symptoms that we can, in any case, assign to it its proper significance.

The discoloration itself is also deserving of close study, both in regard to its character, its distribution, and its progress and mode of development.

In typical cases the skin assumes a peculiar yellowish-brown colour, which can be best described by saying that the patient comes to look closely like a mulatto. Sometimes the brown colour predominates and the surface assumes a light mahogany tint, or as though the skin had been washed with walnut-juice. The term *bronzing* of the skin, which has been very frequently used, serves to describe the general character of the discoloration very well. Niemeyer speaks of the skin sometimes presenting a pure gray colour, inclining to black, like plumbago; but this certainly cannot be regarded as usual or in any way characteristic.

The discoloration does not extend uniformly over the surface. It seems that there is a general tendency to excessive formation and deposit of pigment, and it is probable that in many cases there is discoloration all over the body, though very faint excepting in those places which are most exposed, or where there is a natural tendency to the deposit of pigment.

Thus the face and hands are most frequently discoloured, and dark patches are also found about the genitals, in the axillæ and the popliteal spaces, and along the spine and the linea alba. These darker portions of skin gradually shade off into the surrounding lighter surface; very rarely do they pass abruptly into skin of normal colour. In Mr. L.'s case, the dark areas shaded gradually off into surrounding lighter skin, excepting on the hands, where the discoloration was abruptly limited on the sides. It is not rare to observe small spots of much darker colour upon the deeply discoloured areas. In addition, it has been frequently noticed that intense

discoloration is developed wherever an abrasion has occurred, or a blister has been applied, or wherever pressure has been exerted, as in the line of a strap worn over the shoulder, or of a dress-string around the waist.

The discoloration does not extend to the palms of the hands or the soles of the feet, though these have in some cases been observed to present dark spots. The roots of the nails remain free, and, indeed, owing to the coexisting anæmia, they are unusually white and present a very marked contrast with the dark colour of the back of the hand.

The discoloration often affects the mucous membrane of the mouth, and irregular bluish-black streaks or spots are frequently found on the lips and inside of the mouth, and more rarely on the tongue. Greenhow states that similar streaks exist in Lascars, thus supplying a further illustration of the resemblance between the pigmentation in Addison's disease and that which exists in the darker races of mankind. Niemeyer is inclined to regard these patches on the mucous membrane as pathognomonic of Addison's disease, since he finds no mention made of them in any of the recorded cases of bronzed skin without disease of the supra-renal capsules.

On the other hand, the conjunctivæ remain normal, and in only two cases have I found it recorded that they presented a peculiar dirty-brown colour. Small dark spots of pigment have also been noticed in the iris. Another singular illustration of the general tendency to excessive pigmentation, is the fact that the hair has been noticed to grow darker. Dr. Addison stated (*loc. cit.*, p. 215) that the irregular and excessive distribution of pigment was also occasionally manifest in the internal organs.

The mode of appearance of the discoloration is peculiar. It has been observed in cases where the symptoms have lasted only four months; but it does not usually appear among the early symptoms, and it certainly becomes most intense in slow chronic cases. It has frequently been noticed, and this was very well marked in Mr. C. L.'s case, that the colour varies considerably from time to time during the course of the disease. Allusion has already been made to the remarkable paroxysmal progress of this affection—periods of comparative ease and apparent improvement following the most alarming conditions. It is found that during or soon after (Bristowe) the exacerbation of the general symptoms, there is a marked deepening of the colour, while during the following period of remission the discoloration grows decidedly lighter. Not only so, but after the bronzing has become very marked in a certain place, it may fade away there, while some other area is growing much darker. The microscopic appearances of the discoloured skin will be alluded to under the head of morbid anatomy.

The skin is usually dry and harsh, and in some cases a peculiar disagreeable odour of the perspiration has been observed.

Having thus spoken of the peculiar symptoms of Addison's disease, it remains to allude briefly to its course and termination. Occasionally the

development of the early symptoms is more rapid and abrupt than usual, and the disease runs a rapid course, terminating fatally in a few months. It is probable, however, that in such cases, latent disease has been progressing in the supra-renal capsules for an uncertain length of time, and that finally an abrupt outbreak of the general symptoms has occurred. But in the more typical and ordinary cases, the course of the affection is a very chronic one, extending over from two to five or seven years, or even longer. Allusion has also been made to the remarkable alternations of apparent improvement and of rapid progress of the symptoms which are presented during this course, so that a patient whose condition appears almost hopeless may slowly rally, regain strength, and even be able to resume light occupation; in most instances, unfortunately, only to be abruptly reduced in the course of a few days to a condition of even greater prostration than at first by some apparently causeless attack of vomiting, diarrhoea, or some such disturbance. Several of these alternate paroxysms and remissions may be presented in the course of the disease. Finally, however, the patient sinks into a state of excessive prostration, the appetite fails, the pulse becomes extremely feeble and small, the temperature falls, there may be slight delirium, with a tendency to coma, or, on the other hand, convulsions may occur, and death follows from exhaustion. In some cases, death is preceded by a quite sudden and extreme collapse, not a little resembling that of cholera, excepting that there are no discharges, or at most only occasional vomiting. I would also call particular attention to the great liability to sudden death in Addison's disease. It is not uncommon in cases where the prostration is extreme for death finally to occur, as it did in Mr. L.'s case, very suddenly with or without some muscular effort to cause it. But it also occasionally happens that, in cases where the debility has not yet become so alarming, some rather excessive exertion may be followed by sudden and fatal syncope. Thus in an unpublished case, the details of which were communicated to me, the patient was removed from Philadelphia to Chicago, but died almost instantly on making some slight muscular effort after this fatiguing journey. So great is the danger of this fatal accident in cases of Addison's disease, that the relatives should be warned of the possibility of its occurrence, and positive injunctions be laid upon any unnecessary or unusual exertion.

The *prognosis* is almost invariably unfavourable as regards the final termination of the case; though life may be very greatly prolonged. In a few cases on record, very great improvement occurred, and, at the time of the report, had lasted so long as to give rise to strong hopes that it might prove permanent. Nor, so far as is known, is there any insuperable reason why recovery may not occur in Addison's disease. But as a matter of fact in nearly every case, if not in every one where the disease had been observed to the close, it has resulted in death.

Morbid Anatomy.—The lesions which are found after death from this affection are deserving of careful study. I have already spoken of the condition of the blood (p. 335), and will now call attention first to those appearances which are most constant and characteristic, and then to those which are less frequently met with.

The *skin*, where it is the seat of discoloration, presents the same conditions as are found in the darker races of men. The pigment, in the form of fine granular particles, is deposited in the rete mucosum, while the more superficial layers of the epidermis and of the true skin usually remain free from any coloration.

The lesions of the *supra-renal capsules* which are to be regarded as characteristic may be traced exclusively to a process of chronic sclerotic inflammation with caseous degeneration of parts of the newly formed exudation. It occasionally happens that true tuberculous granulations will be also found developed in the stroma of the gland surrounding the areas of cheesy degeneration. A minute description of these lesions will be found at page 83 (Mr. L.'s case), and I shall, therefore, in this place, merely sketch in general terms the different stages which the morbid process passes through, and the general and microscopical characters of each.

In the early stage, which is scarcely ever seen excepting in the cases which run a comparatively acute course, the capsules are enlarged and heavy; their envelope is usually inflamed and thickened. On section, the pigment layer, which is so marked in the healthy capsules, is absent, and there is no line of demarcation between the cortex and the medulla. If the process has involved the whole gland uniformly, the section may present a uniform grayish, semi-translucent structure. This is due to inflammatory hypertrophy of the interstitial fibro-cellular tissue, the gland elements having undergone atrophy. On microscopic examination, a finely fibrillated stroma is observed, with numerous lymphoid cells and nuclei. This corresponds to the first stage of sclerosis. A little later, the capsule is still enlarged as before, but a section presents a marbled appearance, the grayish, semi-translucent surfaces being dotted with irregularly-rounded, opaque, yellowish or cream-coloured patches, where fatty degeneration of the new-formed tissues has begun. The subsequent changes which the capsules undergo are familiar in other forms of sclerosis. The grayish, fibrillated stroma develops into a more and more dense fibroid tissue, contracting and causing puckering and shrivelling of the capsule. The patches of fatty degeneration undergo the various stages of retrograde metamorphosis. The fibrils disintegrate, the cells become shrivelled and filled with oily and granular matter. In some instances a process of fatty liquefactive change occurs which reduces the degenerating spot to a pseudo-cyst, filled with a diffuent, creamy matter, which is really of oily nature, though often erroneously described as purulent. Occasionally such cysts persist for a long time, and remain with

their peculiar fluid contents after other parts of the organ have passed into further stages of degeneration; but usually the fluid parts are slowly absorbed, leaving a dryish, friable, and cheesy residue. In other instances, this stage of cheesy degeneration is gradually induced without passing through the intermediate stage of liquefactive softening. Subsequently the organic portions of these cheesy collections are slowly removed by absorption, and more or less complete calcification results. It will be seen, therefore, that the affected capsules present different conditions, according to the duration and stage of the morbid process, although this is in all cases one and the same. It has already been mentioned that occasionally true tuberculous granulations are found in the stroma surrounding the areas of cheesy degeneration. This does not, however, justify the view that the morbid process is essentially a tuberculous one, since a similar development of tuberculous granulations, due to the infectious influence of areas of cheesy degeneration, is familiar as a secondary phenomenon in many localities. In the last stages of the change, as seen in typical chronic cases, the capsules are very irregular in shape, puckered and nodulated. They may be smaller than normal, owing to contraction and absorption. Their envelope is dense, thickened, and often closely adherent to adjoining parts. On section they present the various stages of degenerative change above described. In nearly every case (all but 4 out of 128 — Greenhow) both capsules are affected, but far more frequently it has not advanced equally in the two.

It will be seen that many of the symptoms of Addison's disease appear to indicate some implication of the sympathetic nervous system, or of the pneumogastric nerves, and accordingly, in a small number of cases, a careful examination has been made of the condition of the supra-renal and solar plexuses.

Considering the close proximity of the supra-renal capsules to the large abdominal nervous ganglia, and the fact that there is marked thickening of the envelopes of the capsules, as well as of the surrounding cellular tissue, it is but what might have been expected that the ganglia and plexuses should be invested with indurated and condensed tissue. In a few instances the fibrous tissue in the ganglia is stated to have been increased, with or without alteration of the nerve-cells. Examination of the nerve-trunks connected with these plexuses has also shown that the morbid process had extended to their sheaths, causing fibroid thickening with or without atrophy of the nerve-fibrils from pressure. It cannot yet be said, however, that such lesions are constant or even frequent, since careful examination of the parts has been made in but few instances; and, in some of these, with negative results. Thus, in the case of Mr. C. L., minute examination of the abdominal sympathetic nerves and ganglia revealed an entire absence of any lesion. It is much to be regretted that this point has not more frequently been examined with such care as to establish positively

the existence or non-existence of any definite changes in these nervous tissues, since, as will be seen later, one of the most popular theories for explaining the peculiar symptoms of Addison's disease rests entirely upon the serious complication of the sympathetic nerve. Apart from this, no lesions are known to occur in the nervous system, although careful examinations of the brain and spinal cord are still much needed.

Thorax.—The lungs very frequently present caseous nodules, surrounded by fibroid induration. Frequently, also, softening of the cheesy matter has occurred with the production of small cavities, such as I have described in Mr. C. L.'s case. The amount of lung-tissue involved may be limited to a patch one inch in diameter, or a considerable part of the upper lobes may be consolidated. The cavities are, as a rule, old, and there may or may not be a development of miliary tubercles in the surrounding tissues. In other cases, on the contrary, the lungs present the lesions of diffused miliary tuberculosis, resulting, I believe, from constitutional infection from the caseous nodules in the supra-renal capsules. In many cases, the existence of long-continued irritative action in the lungs is shown by the existence of old pleural adhesions and fibroid thickening of the pleuræ. It is unusual to find any pleural effusions. The *heart* has, unfortunately, not been often subjected to careful microscopical examination in this affection. In cases where it has, fatty degeneration of the muscular substance has generally been detected, as might be anticipated from the extreme anæmia and the evidences of failure of heart-power. There is no tendency to valvular disease. In a few cases, recent pericarditis has been found.

Abdomen.—Occasionally spots of excessive deposit of pigment have been observed on the peritoneum or in some of the viscera. Cellular adhesions may exist between different organs or between folds of intestine, and in cases where general tuberculosis has been developed, miliary granulations are apt to exist upon the peritoneum also.

The liver and kidneys are, as a rule, found healthy.

The spleen, though sometimes mentioned as healthy, is usually decidedly enlarged, swollen, and soft. Its colour is most frequently dark, so that it has been compared to the spleen in typhus fever; but in Mr. L.'s case I have noted it as *rather pale*.

The mucous membrane of the stomach is rarely healthy. In some cases enlargement of the gastric follicles is found, as described at page 84; in others a mammillated condition is observed, which is due, according to Coupland and Schäfer, to local outgrowths of lymphoid tissue. Small ecchymoses are occasionally found on the mucous membrane, and, more rarely, small abrasions or ulcers.

The intestine usually presents the evidences of chronic intestinal catarrh; and, although in the present case there was no enlargement of the solitary glands or of Peyer's patches, these lesions are present in very many

instances. I would call special attention to the numerous subperitoneal and submucons ecchymoses which existed in Mr. L.'s case (see page 84). Ulcerations are but very rarely found. The mesenteric glands are enlarged and occasionally caseous; in the present case they contained abnormal deposits of pigment, possibly the result of the ecchymoses above described. The retro-peritoneal glands in the neighbourhood of the supra-renal capsules may also be found enlarged, and in a state of cheesy degeneration.

Bones.—In a typical case of seven years' duration, reported by Gull (*Medical Times and Gazette*, October 21, 1865, p. 441), the patient had complained of pain in the left foot. At the autopsy, characteristic lesions of the supra-renal capsules in the last stage were observed. The bones forming the left ankle joint (tibia and astragalus), as well as others of the tarsal bones, were soft, and easily cut by the knife. On section they presented either a yellow (fatty) or a red appearance. None of the joints, including ankle joints, were at all diseased. No mention is made of the other bones. I trust that in future examinations the state of the marrow may be carefully determined.

Causes and Nature. Explanation of Symptoms.—It has been seen that the lesion of the supra-renal capsules, which is characteristic of Addison's disease, is a chronic inflammation of low grade, with sclerosis and cheesy degeneration. It is interesting to inquire what causes induce such a condition of disease in these organs, about whose functions our knowledge is so imperfect. It is evident that the affection is not primarily tuberculous in character; and, indeed, from an examination of the antecedents of patients, and from the age at which it chiefly occurs, it can scarcely be classed as scrofulous. It is true that Greenhow and others speak of it as frequently occurring in persons of a tuberculous diathesis; but this appears doubtful to me, since I should be inclined to regard the lung trouble as secondary, the result of infection from the cheesy, degenerating capsules. Indeed, it would seem that the number of cases in which general miliary tuberculosis has followed from such constitutional infection is very small relatively, so that it would not indicate that the subjects in whom Addison's disease has been observed were at all strongly predisposed to tuberculosis.

It appears from the analysis which Greenhow has published of nearly all cases on record that Addison's disease is far more frequent in the male sex, and occurs almost exclusively in those who are engaged in active manual labour, the cases being pretty equally distributed over the laborious period of life, and being almost entirely confined to that period. In a few instances the beginning of the disease has been referred to the occurrence of some strain or injury to the back; and, from the character of occupation of the vast majority of the patients, it is highly probable that such a cause may have very frequently existed without attracting especial attention. I would refer here to the marked pain which was experienced by

Mr. L., for years before the development of definite symptoms, whenever he engaged in such work as digging, which requires straining efforts with the back. Further, in a considerable number of cases, there has been chronic inflammatory disease of parts adjacent to the supra-renal capsules, such as caries of the vertebræ; and it is altogether probable that the latter disease was the primary one, and that the capsules became affected by extension of inflammation. It is, of course, impossible to decide in how large a proportion of all cases of Addison's disease the above direct causes are operative, and in how many instances, if at all, the disease arises from general constitutional causes alone. It is quite possible that there may exist in certain persons a peculiar tendency to this low grade of inflammatory action in the supra-renal capsules, which is readily excited by slight mechanical causes.

According to various writers climate would seem to play a marked part in the causation of Addison's disease. Thus it appears to be far most frequent in England, and then, according to Jaccoud, Italy, the Low Countries, Germany, and finally France follow. It is certainly a rare affection in America. Still I doubt if much value can be attached to any of these statements, since they are based merely on the proportion of all the recorded cases (but little over 300 in number) which has occurred in each of the respective countries. Before the true influence of climate can be determined, it will require a far larger range of observation, directed with equal attention, in the various localities. Hitherto the attention of the profession in England has naturally been closely directed to this subject, and, it is probable that, in consequence, cases have there been detected which elsewhere might have been overlooked. It must also be remembered that the real frequency of any affection must be calculated in relation with the number of inhabitants of each country; and especially with the extent of population in the large cities, from which the great proportion of records of such cases is drawn. It will be readily understood why a disease, plausibly thought to be due, in many cases, to strain or injury, should occur with comparative frequency in such a city as London, with its vast numbers of male inhabitants engaged in every species of hard work. It seems to me probable that climate will be found to have no special influence whatsoever.

If the causes of Addison's disease be not definitely ascertained, the relation between the lesion of the capsules and the characteristic symptoms of the affection are equally the subject of discussion.

In the first place it must, I think, be admitted that these symptoms are not directly dependent upon the disturbance or abolition of any function the supra-renal capsules may be supposed to possess. It has been shown by Harley and others (see *Brit. and For. Med.-Chir. Review*, 1856), despite the experiments of Brown-Séquard, that the supra-renal capsules

are not in any way essential to life, and that their removal leads to no definite disturbance.

The capsules may be the seat of other forms of disease, as hemorrhage, cancer, cysts, fatty degeneration, to such an extent as to lead to entire loss of the healthy structure, and yet without the development of the peculiar discoloration of the skin or the characteristic general symptoms. There are quite a number of cases which demonstrate this position; and I will merely give the following brief summary of a case in which cancerous nodules were found in the left supra-renal capsule, without the presence of discoloration or any characteristic symptom.

CASE I.—Sarah S. æt. 29 years, married but sterile, was in ill health during 1866, with symptoms of severe irritation of rectum and bladder, followed by the appearance of a hard tumour in left iliac region. In fall of 1867, symptoms of acute cerebral softening (attributed to presence of a cancerous tumour in brain) made their appearance, and death followed within a fortnight. There was marked emaciation, but no discoloration of the skin in any part.

At the post-mortem examination, a small tumour was found in the brain with red softening surrounding it. There was scirrhus cancer of left ovary. The right supra-renal capsule was healthy, the left was enlarged and hardened, and on section presented several nodules of scirrhus cancer. There were some old and quite firm local peritoneal adhesions.

It is evident from the stage which has been reached by the morbid lesion in some cases where the symptoms have existed for but a comparatively short time, that even extensive degeneration of the supra-renal capsules may occur before the development of any recognizable symptoms. And further, it appears from the record of a small number of cases, that when the disease has been limited to one capsule, the general symptoms and course of the case have not been different from those of the more common form where both capsules are affected, even if not to exactly the same degree.

As it seems indisputable, therefore, that the peculiar features of Addison's disease cannot be dependent upon the mere impairment or abolition of any function which the supra-renal capsules may possess; and yet as it is established beyond question, that the occurrence of the peculiar form of inflammatory degeneration of these organs which we have described, is the characteristic and primary lesion in Addison's disease; it becomes evident that the symptoms must depend upon some influence exerted by the diseased capsules upon the rest of the economy.

This brings us directly to consider the two principal ways in which such an influence may be supposed to be exerted.

The first of these, which has attracted a great deal of attention and favourable comment from some of the most distinguished investigators of this subject, is through the medium of the nervous connections of the supra-renal capsules. The second is by the slow induction of cachexia, with grave disturbance of the elaboration of the blood, and interference with general nutrition.

The first supposition is based upon the following data :—

1. The unusually rich nervous supply of the capsules.
2. The proximity of the solar plexus and the semilunar ganglia.
3. The connection of the nerves of the capsules with the phrenic and pneumogastric nerves.
4. The character of many of the principal symptoms which follow degeneration of these organs.

There has been a good deal of doubt about the exact anatomical structure of the supra-renal capsules, though all authorities agree as to the large number of nervous branches which are connected with them, and as to the existence of a certain number (probably quite small) of nerve-cells, in the central medullary substance. Some writers have been led, in consideration of this, to rank the capsules among the nervous structures; but the most elaborate and apparently reliable investigations, those of Grandry,¹ appear to finally decide their place to be among the ductless glands. It is not possible at present to assign any function to them, though it would seem from analogy, that they are in some way connected with the elaboration of the blood. It has been already seen that they are not essential to life.

It is evident, however, that if a chronic inflammatory process should extend from the capsules to the connective tissue surrounding them, and at the same time along the sheath of the nerve-branches connected with them, such a degree of hyperplasia and thickening might result, followed by such contraction and condensation of the affected tissues, as would seriously irritate and involve, and ultimately cause atrophy and degeneration of the nerve-branches and even of the solar plexus and the semilunar ganglia. It may even be conceived that, before any gross lesions of the sheaths of the nerves connected with the capsules, or of the cellular tissue investing the ganglia, should be developed, so much irritation of the terminal filaments in the capsules might exist as to give rise, by reflex action, to very marked results.

Granting that such irritation and such morbid changes should be present, it is not difficult to trace an explanation of some of the most characteristic symptoms of Addison's disease.

Thus the extreme muscular debility may be attributed to the prolonged reflex irritation of the nerve centres; the frequent action of the heart with small feeble pulse, and the disposition to breathlessness or even syncope on exertion may be referred to implication of the pneumogastrics and phrenics, or to irritation of the thoracic ganglia of the sympathetic; the irritability of the stomach with nausea and vomiting, and the occasional abdominal pain and diarrhoea would point to interference with the solar plexus and semilunar ganglia; and it is further possible, if certain experiments of

¹ Journ. de l'Anat. et de la Phys., 1867, pp. 225 and 369.

Pinens (quoted by Greenhow from Funke's Physiology) are reliable, that the evidences of catarrhal irritation of the mucous membrane of the stomach and intestine may depend upon the disturbance of these same great nervous ganglia. It has been shown by careful experiments (Jaschkowitz), that section of the abdominal sympathetic is followed by a moderate degree of swelling and enlargement of the spleen, such as is observed in a great number of cases of Addison's disease.

Finally, there is good reason to attribute the unusual tendency to pigimentary deposition in the skin, and elsewhere, to a morbid irritation of the nerves of the abdominal plexus. It has been already seen (see page 337) that there is no definite relation between the extent of the lesion of the supra-renal capsules and the degree of the discoloration; that discoloration of the skin is known to occur only in connection with chronic sclerotic and caseous inflammation of the capsules, while various other organic lesions of these organs occur without any such result; and that consequently it cannot be held that the bronzing of the skin depends upon the disturbance of the function of these organs.

The fact that Vulpian has found that the capsules and the blood passing from them contain a substance which yields a peculiar deep-blue reaction with perchloride of iron does not appear to have any special connection with the peculiar bronzing of the skin in Addison's disease.

Again, it is a perfectly familiar fact that very marked discoloration of the skin may be found in cases where the supra-renal capsules remain entirely healthy. In cases of hepatic or gastro-hepatic disease, or of chronic malarial fever, a discoloration of the skin may occur, which closely simulates that described in connection with Addison's disease. In cases of uterine disease I have known the bronzing of the skin to be so intense, and to occupy such positions as to give rise to serious doubts as to the nature of the case. So, too, where extensive disease of the abdominal organs exists, as in the case of cancer of the peritoneum and ovary reported by Dr. S. Weir Mitchell (*Amer. Journ. Med. Sciences*, Oct. 1867, p. 413), or as in the case of tuberculous peritonitis reported below by us, very marked bronzing or discoloration of the skin may occur. It is true that in most of these cases the discoloration differs either in locality or in arrangement from the bronzing which is characteristic of Addison's disease. It is also true that the peculiar stains on the inside of the lips, mouth, and tongue, are rarely, if ever, seen excepting in the latter affection. But still, so great is the resemblance sometimes presented, that it is necessary to conclude that local discolorations, without the characteristic general symptoms, should not be regarded as diagnostic of Addison's disease, and that even when the bronzing is marked and extended, we should hesitate about making a diagnosis of Addison's disease, unless no pathological condition of any organ (other than the supra-renal capsules) can be detected.

In considering the manner in which the discoloration of the skin is brought about in these various conditions, it appears that the only element they possess in common is irritation of the abdominal plexus of nerves. Accordingly, the explanation which is now generally accepted of the bronzing of skin in Addison's disease is that it is due to slow, progressive increase in formation of pigment under the influence of irritation of the vaso-motor nerves. One of the peculiarities of the discoloration—the fact, namely, that its intensity varies from time to time—would seem to be better explained upon this supposition than upon any other.

When now we pass from this to the consideration of the various other symptoms of Addison's disease already mentioned, it must be conceded that the view so ably supported by Jaccoud,¹ Greenhow,² and others, which refers these symptoms also to morbid irritation, or entire loss of function of the nerves connected with the supra-renal capsules, is entitled to careful consideration. Attractive as it is, however, I cannot feel, even with a full appreciation of all that has been urged above, that this theory of the disease is entirely satisfactory and sufficient. I do not doubt that many of the symptoms are due to such interference with the nervous system; but I incline to believe, also, that the element of constitutional infection from the foci of cheesy degeneration must also be taken into account.

It must be observed that the number of post-mortem examinations as yet recorded in which lesions of the abdominal sympathetic have been demonstrated are but few in number. It is true, on the other hand, that we have comparatively few cases recorded where it is distinctly stated that careful examination of the solar plexus and semilunar ganglia revealed no lesions. In the case of Mr. C. L., however, it will be seen (p. 84) that careful study, both of the gross and microscopic structure of the abdominal sympathetic, gave purely negative results. It is difficult, therefore, to comprehend how such a perfectly healthy condition could have been maintained if the very marked and characteristic symptoms which existed for several years were dependent chiefly upon morbid irritation of these nerve-ganglia and branches. At the same time, it may very well be believed that the thickening and induration of the envelope of the supra-renal capsules and of the surrounding cellular tissue which existed might produce enough reflex irritation of the sympathetic ganglia to aid in the development of some of the more purely nervous symptoms of the case. It is to be observed, also, that in Mr. L.'s case certain phenomena which would seem to be most plausibly referred to mere nervous irritation, were not so marked as is usual in equally characteristic cases.

¹ *Nouv. Dict. de Méd. et Chir. pratiques*, t. v., 1866. Article, *Maladie Bronzée*.

² On Addison's Disease, Croonian Lectures for 1875.

Further investigations are necessary before a positive opinion can be pronounced, but it would certainly appear to be established that in Addison's disease some of the symptoms are dependent upon interference with the ganglia of the abdominal sympathetic, and with other nerves connected with the supra-renal capsules; and it seems probable, also, that the amount of this interference varies in different cases, and that, in consequence, the comparative prominence or slowness of certain symptoms will result.

It is necessary now to consider the symptoms from the other standpoint, and to discuss how far they may bear explanation on the view that Addison's disease is a cachexia, attended with grave disturbance of the elaboration of the blood, and interference with general nutrition.

In the first place it may be well to regard for a moment the evident analogies between the symptoms of Addison's disease and those of other cachexiæ, in which the existence of a special nervous element has not been suspected. In the article published in this Journal in October, 1875 (p. 313), I expressed my belief in the essential identity of the various forms of leukæmia, with so-called progressive pernicious anæmia; and endeavoured to show that the differences between the symptoms of the several forms depend chiefly upon the special organs affected in each. If, now, we compare the symptoms of progressive pernicious anæmia, or anæmatosis, as I have proposed to call it, with those of Addison's disease, a considerable degree of correspondence will be noticed.

*Progressive Pernicious Anæmia, or
Medullary (?) Anæmatosis.*

Insidious and apparently causeless development of languor, debility, and pallor of surface; weak, small pulse; tendency to palpitation of the heart, to attacks of dyspnœa, to giddiness and tinnitus, and later to dangerous and even fatal syncope.

Failure of appetite; sense of pressure or discomfort at the epigastrium; attacks of nausea and vomiting.

In some cases slight, irregular, febrile action. Temperatures sometimes normal throughout.

Absence of emaciation in any marked degree.

Occurrence of hemorrhage from nose, gums, etc., or of petechiæ under skin, or under serous membranes.

Addison's Disease.

Progressive, apparently causeless languor and debility, with, in most cases, bronzing of the skin; weak, small pulse; palpitation of the heart and breathlessness on exertion; faintness, and even tendency to dangerous or fatal syncope on exertion; giddiness and tinnitus occasionally observed; so also tremors, partial anæsthesia or numbness, or even convulsions.

Failure of appetite; epigastric distress; spells of nausea and vomiting.

Febrile action very rare; temperature normal, or even reduced.

Absence of emaciation in any marked degree.

Hemorrhages do not occur. Petechiæ not rarely found after death.

*Progressive Pernicious Anæmia, or
Medullary (?) Anæmatisis.*

Albumen not found in my own cases, but reported to be occasionally present.

Strong anæmic murmurs over heart and great vessels very constant.

Progressive reduction of the mass of the blood, and especially of the proportion of red globules.

Steady progress of debility; the occurrence of wandering delirium, or increasing coma, and finally death. Occasionally, sudden fatal syncope.

Enlargement of spleen, of solitary glands of intestines; ecchymoses; fatty degeneration of heart, liver, and kidneys. Passive serous effusions.

Lesion of marrow of bones, in some cases at least.

Occasionally a centre of chronic supuration.

Addison's Disease.

Albumen not present.

Anæmic murmurs occasionally met with, but not frequent.

Progressive reduction of the mass of the blood; proportion of red globules not specially diminished; increase in proportion of white corpuscles.

Steady progress of debility; wandering delirium; increasing coma, or, in rare instances, convulsions, and finally death. Occasionally, sudden fatal syncope.

Enlargement of spleen, of solitary glands of intestines, of gastric follicles. Ecchymoses occasionally. Fatty degeneration of heart frequent. Serous effusions rare.

Marrow not yet examined.

Chronic inflammation, with cheesy and sclerotic degeneration, and of suprarenal capsules constant.

It appears to me impossible to consider carefully the resemblance thus sketched between the symptoms and course of these two affections, without being struck by its closeness, and being led to inquire whether it may not be possible that there is something in common between them. In speaking of progressive anæmatisis, I have attempted to explain the symptoms there met with, by referring them to the diminution and deterioration of the blood, and the failure of cardiac power from fatty degeneration, and from impaired nervous force. And I think it will be noticed that very many of the symptoms of Addison's disease admit of a similar explanation.

It is true that the bronzing of the skin prevents the development of the familiar anæmic appearance, but in some cases the disease is well advanced or death may even occur before bronzing of the skin appears, and in such cases the appearance of anæmia is very manifest; while in all cases the conjunctivæ and the matrices of the nails are extremely pale and anæmic. The reduction in the amount of the blood and the increase of white corpuscles have been already referred to, and although the colour of the blood remains good and the red globules, while absolutely deficient, do not seem to undergo any great proportionate reduction, it seems altogether probable to me that some grave defect in the elaboration of blood exists. Some of the more usual nervous symptoms (tinnitus, vertigo, etc.) may be plausibly referred to the condition of the heart's

action, and to the cerebral anæmia due to the reduction of the mass of the blood; while others (such as tremors, partial numbness or anæsthesia) may, perhaps, be more properly referred to reflex nervous irritation; though it is not impossible that these as well as the convulsions which are noticed in rare cases may be due to the state of the nervous centres. The weak, small pulse, readily accelerated by exertion; the feeble action of the heart; the breathlessness on exertion; and the tendency to syncope, are certainly capable of plausible explanation by the frequent existence of fatty degeneration of the heart and by the anæmia of the nervous centres. I would again refer to the remarkable resemblance between the progressive and extreme muscular debility which attends both pernicious anæmia and Addison's disease, and which would seem to be explicable by a similar condition of the brain and spinal cord.

But it is not desirable, at the present time, to go more into detail in an attempt to show how plausibly many of the symptoms of Addison's disease might be explained without invoking the element of irritation of the abdominal sympathetic nerve.

Important evidence in favour of the view that there is also in Addison's disease an element of constitutional infection with impairment of blood-elaboration is to be drawn from the anatomical changes. Much light has been thrown of late upon the gradual influence of foci of chronic suppuration or cheesy degeneration in producing infection of the constitution, with the development of secondary cheesy deposits, or even, in cases where the predisposition exists, of general tuberculosis. And in Addison's disease, in connection with the chronic inflammatory changes in the supra-renal capsules progressing slowly during years, we find, in the enlargement and occasional cheesy degeneration of the neighbouring lymphatic glands and of the mesenteric glands; in the swelling of the spleen; in the enlargement of the gastric follicles and of the solitary glands of the intestines; in the increase of white corpuscles of the blood with reduction of its mass; in the very frequent occurrence of secondary cheesy deposits in the lungs, and occasionally of general tuberculosis, a train of pathological changes which is certainly suggestive.

I do not desire to be understood as offering such an explanation of the pathology and symptoms of Addison's disease in place of the one now generally received in which the symptoms are so largely referred to implication of the abdominal nerves and ganglia. But I wish to call attention anew to the importance also of the blood-changes and the signs of constitutional infection in this disease; and to the necessity for careful study of the splenic pulp, and especially of the marrow of the bones, in order to discover whether there is any such lesion there as has been found to exist in progressive pernicious anæmia and medullary leukæmia.

I do not think the microscopic examinations of the blood and tissues have yet been sufficiently numerous and accurate to enable a positive

opinion to be expressed; but I incline to the belief that the essential pathology of Addison's disease may prove to embrace both elements, as follows: a primary chronic degenerative inflammation of the supra-renal capsules; constitutional infection, with production of secondary caseous deposits (or, in some cases, of tuberculosis); impairment of the blood-elaboration (anaematosi), possibly with lesion of the marrow of the bones or of the splenic pulp; consequent fatty degeneration of the heart; extension of irritation from the capsules to the nerves connected with them, to the semilunar ganglia and to the solar plexus. These factors are not stated in what is supposed to be their order of occurrence, or of relative importance in regard to the production of the symptoms of the disease, and it is evident that upon the predominance of one or the other will depend certain peculiarities of individual cases.

Diagnosis.—Many of the questions connected with the diagnosis of Addison's disease may be dismissed with a brief reference only. I have already called attention to the fact that in some cases the development of the muscular debility is so sudden and marked as to give rise to the suspicion that the patient is about to have an attack of typhoid fever. In Mr. L.'s case, his family, who were observant and experienced, were impressed with this belief. But although in a case seen for the first time in one of the sudden spells of prostration, or in a case where the constitutional symptoms make their appearance abruptly, such a doubt might exist for a day or two, a careful study of the peculiar symptoms, an examination of the history of the case, and the absence of the characteristic features of typhoid fever would soon enable a positive diagnosis to be established.

In some cases of pityriasis versicolor or nigra, the patches of discoloration are of much the same shade as is observed in Addison's disease. But here, in addition to the absence of all the peculiar constitutional symptoms, the discoloration does not affect the same localities as in Addison's disease, there is a sharp line of demarcation between the healthy and the discoloured skin, the surface is covered with a fine furfuraceous desquamation, and there are no pigmentary deposits in the mucous membrane.

It is only necessary to mention the fact that the staining of the skin from the prolonged use of nitrate of silver has been mistaken for the bronzing of Addison's disease. In reality it would be difficult to make such a mistake, not only on account of the different colour and distribution of the staining, but also on account of the absence of any of the characteristic general symptoms.

We come now to the more difficult question of distinguishing between Addison's disease and other affections attended with bronzing of the skin. It is true that in these latter cases the discoloration rarely presents the same distribution as in Addison's disease, and also that there are no dark streaks on the mucous membrane of the mouth. But still, these latter are not constant in true Addison's disease, and, in some instances, it

would be impossible to make a differential diagnosis from the characters of the discoloration alone. In such cases we should turn to the constitutional symptoms, a careful study of which will generally enable a correct diagnosis to be made. The following interesting case is reported, however, to show how closely even these may be simulated by other conditions :—

CASE II.—Lydia B., æt. 30 years, single, was admitted to the medical ward of the Philadelphia Hospital, April 4, 1870. She had been sickly from childhood, having had smallpox, typhoid fever, and several pleuritic attacks. No history of syphilis. She had not menstruated regularly since March, 1869, and not at all for two or three months past. Three months before her admission she noticed a brownish discoloration of the skin just below the right breast. This extended so as to cover breast, abdomen, and back. At first it was of very light colour, and gradually grew darker. During this time she was not sick, though still delicate and weak. On April 2, 1870 (ten days before admission), she was attacked with a chill, sharp pain in the side, fever, and loss of appetite. The symptoms soon subsided under appropriate treatment, but a second attack occurred in a fortnight, after which she continued very weak and almost entirely confined to bed. She had occasional severe attacks of digestive disturbance, failure of appetite, vomiting, and diarrhœa. There were also progressive emaciation, frequent complaints of pain in the lower part of the left side of the chest, and great weakness. On August 20th she was put on a diet of skimmed milk, beginning with $\frac{1}{2}$ glass q. t. h., and increasing gradually till she took Oj t. d. Her attacks of vomiting ceased, but she still had occasional diarrhœa, lasting for a few days.

Oct. 10, 1870. A few weeks ago the discoloration of the skin had faded on the front of the trunk, in some parts having almost disappeared, but it is again growing darker. The position of the darkest discoloration is below the umbilicus and over the hypochondria, and from these points the tint gradually shades off, merging into the lighter intermediate portions. The linea alba is very dark. The dorsal surface of the trunk presents quite uniform dark-brown discoloration, beginning over sacrum and extending upwards to level of second lumbar vertebra, where it shades off very gradually to the colour of the remaining part of the back, which is decidedly darker than normal. There are numerous scattered spots of dead white skin (vitiligo) over the back. These vary in size from 1 to 4 lines in diameter, and are usually ovoid in shape.

There is also a large discoloured patch, mottled with whitish spots, on the anterior part of each thigh, reaching nearly up to the groins, which are not discoloured. There are no spots of vitiligo on abdomen.

The face is sallow and dingy, but the conjunctivæ remain clear, and are pearly white. There is no discoloration of the hands, the axillæ, or of the popliteal spaces. There is, however, marked discoloration of the outer surface of arms from wrists up to shoulders. In several places where blisters have been applied there is very intense discoloration.

The emaciation is not yet extreme, but there is very great loss of muscular power, so that she is scarcely able to walk, and even on attempting to get up she suffers from vertigo and faintness. A walk of even fifty yards causes great prostration, violent palpitation of the heart, and dyspnoea. She consequently scarcely ever leaves the bed.

There are no marked nervous symptoms, except such as depend on the extreme anæmia and debility. The mind is clear, and she does not suffer from headache. She does not dream much, and usually sleeps fairly, though some nights she is very restless.

The tongue is clean and moist, the bowels are now quiet. There is complete absence of appetite.

For past two weeks there has been a painful swelling above the styloid process of the right radius, which is the seat of rheumatoid pain, worse at night.

There is frequent, dry, hacking cough, without expectoration. There is

some tenderness, with sharp pain on coughing or deep breathing over lower part of left thorax. There is no dulness on percussion. There is blowing breathing with prolonged expiration at the right apex. At the left apex there are some crackling râles; and over left chest are friction sounds which vary in position and character. Respirations are not much accelerated except on exertion.

The cardiac sounds are normal. The pulse varies from 85 to 115, is regular but small, quick, and feeble. No hectic fever. There is no complaint of pain in abdomen or in loins. The urine is passed freely and is normal. There is no œdema.

21st. Less pleuritic pain. Debility increasing, so that after walking a few steps she suffers from vertigo, dyspnoea, and palpitation. No syncope. Sleeps poorly, without apparent cause. There is utter anorexia, and occasional diarrhoea.

Nov. 23. Physical signs much the same. No dulness; râles near root of right lung. Emaciation and debility increasing. For past four days there has been frequent and causeless vomiting. There is now considerable tenderness over the stomach. The discoloration of the abdomen has grown much lighter; and so has that of the back, though to a less extent.

Her treatment has consisted of quinia and cod-liver oil, which has been well borne by the stomach except during the attacks of vomiting. The vomiting has yielded most readily to small doses of morphia and chloroform, or of creasote. Her diet has consisted of milk, beef-tea, eggs beaten up with milk and whiskey; but no solid food.

Dec. 14. Has had another attack of vomiting lasting three days; vomiting a clear, slightly acid fluid three times daily. Bowels regular. She has but little cough. Emaciation is advanced, and debility extreme, dyspnoea occurring on slightest exertion. She has not, however, a sense of profound feebleness. She sank steadily, and died December 21, 1870; œdema of the right leg having supervened.

Post-mortem Examination.—Body extremely emaciated. Discoloration of abdomen very much diminished; that of back less so. Discoloration of thighs persists. The œdema of the right leg and right labium is still present. The brain and cord were not examined.

Thorax.—Heart small, but healthy. The lungs showed patches of adhesions here and there. On cutting into them, numerous disseminated patches of cheesy consolidation were found. These patches were, for the most part, superficial, covered by a layer of healthy vesicular tissue, and showed no softening; in a few places, however, central softening had occurred and led to small vomicae.

Abdomen.—Liver fatty, pale yellowish in colour. Spleen somewhat enlarged; capsule much thickened and adherent to abdominal wall: pulp apparently healthy. The kidneys were healthy. The supra-renal capsules were also healthy.

There was diffuse peritonitis with matting together of the folds of the intestines. The peritoneum was thickened, and was studded over with numerous small grayish-yellow granulations.

The sympathetic ganglia of the abdomen were carefully examined, and presented a healthy condition. The entire body was intensely anæmic.

Unfortunately no microscopic examination was made of the blood or of the marrow of the bones.

It will thus be seen that bronzing of the skin is of comparatively little value in the diagnosis of Addison's disease, without the presence of the characteristic general symptoms. It appears also that, since both the general symptoms and the bronzing of the skin may be produced by other serious abdominal lesions, it is necessary to determine that there is no such condition present (as tuberculous or cancerous peritonitis for instance) before deciding that the case is truly one of Addison's disease of the supra-renal capsules. If it be true, then, that both the bronzing

of the skin and the general symptoms may be closely simulated in cases of other serious abdominal diseases, it would follow that we have a certain very peculiar group of symptoms, often attended by bronzing of the skin, which are believed to be due to conjoined impairment of the elaboration of the blood (anæmiasis) and irritation of the abdominal sympathetic and pneumogastric nerves; and which may apparently be caused by various local lesions, but especially by chronic degenerative inflammation of the supra-renal capsules. It is only necessary to refer to the comparison of the symptoms of Addison's disease and of progressive pernicious anæmia (anæmiasis) given at page 350, to appreciate the difficulty which would exist in distinguishing between the two, if it were not for the bronzing of the skin. Indeed I must confess that I see no means by which a positive diagnosis could be established in the absence of that symptom.

When we recall the fact that bronzing of the skin is not an essential symptom of Addison's disease of the supra-renal capsules, but gains its significance only in connection with the peculiar constitutional symptoms; it would seem desirable that so soon as the true nature of this peculiar group of phenomena (so closely analogous to those of progressive pernicious anæmia, and which are closely simulated in some other forms of abdominal disease) is clearly understood, some new term which may seem appropriate—*anæmiasis with bronzing of the skin*, or whatever else it may be—should be chosen to designate it. Until then, it is more convenient to retain the term Addison's disease, although in reality this should be restricted to the peculiar anatomical lesion of the supra-renal capsules first connected with these symptoms by Dr. Addison. This view seems to me of very great importance, because it widens and enlarges our conception of the nature of these constitutional symptoms which form a well-marked group, and which may be developed by chronic degenerative changes in the supra-renal capsules or by other irritative morbid processes in the abdominal organs.

Treatment.—Having already spoken of the prognosis, duration, and modes of termination, it remains only to speak of the treatment. Unfortunately there is but little of definite character or value to be stated. Many remedies have been recommended and tried, but in almost every case on record the case has progressed inevitably to a fatal issue. In some instances, temporary benefit has been thought to follow the use of some plan of treatment; but when we bear in mind the remarkable remissions which occur in the ordinary course of the disease, it is evident that great care must be used in forming any such conclusions. It cannot be doubted however, that it is possible to prolong life and relieve some of the symptoms by appropriate treatment; and in a very small number of cases it is possible that the progress of the disease has been checked, at least, for a considerable length of time, if not permanently. It will be remembered that at several periods in Mr. L.'s case, decided improvement occurred,

though only once did it last long enough to offer any encouragement as to the effect of his remedies, which were at that time nitrate of silver and iodide of iron, with faradization.

One of the most important elements in the treatment is *rest*. So long as any threatening symptoms of debility are present, the patient should remain in bed, and during the periods of temporary improvement, he should indulge but very cautiously in any exertion. This rule is not only important as tending to prevent excessive fatigue and relapses, but on account of the danger of sudden death from collapse, if any over-exertion is permitted.

It is probable that prolonged counter-irritation over the region of the supra-renal capsules might be productive of some relief, but I do not know that it has been tried sufficiently to justify any expression of opinion.

One of the most important indications is to avoid gastric disturbance, which is best effected by careful attention to diet. No general rule can be laid down upon this subject, owing to the capricious state of the appetite and taste which is often present. In most cases milk, with or without lime-water, may be freely given with advantage; and at times an exclusive milk diet affords relief. More often it becomes necessary to vary the diet from time to time, choice being made especially of simple, nourishing and digestible articles of food. The condition of the bowels is usually one of moderate constipation; but great care must be observed in the use of purgatives, owing to the dangerous prostration which is apt to follow their action. If it be impossible, therefore, to secure a sufficiently regular state of the bowels by laxative articles of diet, recourse should be had to simple enemas or to mild vegetable laxatives. During the attacks of gastric disturbance, attended with nausea and vomiting, which occur from time to time, the diet must be restricted to the administration at short intervals of small quantities of milk and lime-water or of beef-juice; associated with the use of ice-d seltzer water, ice-d dry champagne, powders of subnitrate of bismuth, etc. I obtained the most marked benefit, during these severe attacks in Mr. L.'s case from the use of chlorodyne in repeated doses. It may be necessary, owing to the obstinacy of the vomiting, to resort to the temporary use of nutritious enemas.

Another important indication is to increase muscular strength. It is true that this is essentially connected with the disease, and probably depends upon the anæmia as well as upon the exhaustion of the nervous centres by reflex irritation, and consequently its rational treatment would resolve itself into the treatment of the primary disease itself.

The use of strychnia appears indicated; but I do not know that it has been found of service. I have employed it but for a short time with negative results. The remedy from which I found most advantage in this direction was undoubtedly faradization with mild currents. Bearing in mind the liability to fatty degeneration of the heart, I should recom-

mend the occasional use of digitalis, especially in those cases where a tendency to spells of palpitation and dyspnœa on exertion is marked. Alcohol should be administered in small quantities, and in whatever form is best tolerated by the stomach.

The great indication in the treatment, however, must certainly be to endeavour to modify the morbid process in the capsules and surrounding tissues, and to counteract, so far as possible, the interference with the elaboration of the blood.

Among the remedies which prove most beneficial are, as might be expected, cod-liver oil, iron, phosphorus, nitrate of silver.

Iron especially should form an element of the treatment. I do not know that the form in which it is administered is of great consequence, provided that it be well borne by the stomach. Greenhow strongly recommends the tincture of the sesquichloride, $\mathfrak{m}\mathfrak{xv}$ to \mathfrak{xx} , with chloroform $\mathfrak{m}\mathfrak{xv}$ to \mathfrak{xx} and glycerin \mathfrak{ij} . The iodide of iron would also seem likely to be of much value.

Phosphorus, which was strongly recommended by Broadbent in the treatment of leukæmia and allied affections on account of its supposed power of influencing the elaboration of the blood, has not been approved by the results of more recent and extended experience. It may be said, however, that this drug is still deserving of a careful trial in Addison's disease.

Nitrate of silver may be given with at least temporary advantage, especially in cases where irritability of the stomach and bowels exists, probably associated with chronic follicular catarrh of the mucous membrane. It is not unreasonable to believe that it may also produce a favourable alterative effect upon the chronic inflammatory process going on in the capsules and the surrounding cellular tissue. I used it in Mr. L.'s case, simultaneously with the iodide of iron, and with apparent marked benefit.

ART. III.—*The Proper Treatment of Pelvic Effusions.* By D. WARREN BRICKELL, M.D., Prof. Obstetrics, etc., Charity Hospital Medical College, New Orleans.

ACCORDING to my observation, pelvic inflammations are quite common, and they are not confined to married or child-bearing women. As distinct a case of pelvic cellulitis as I have ever seen—one requiring operation for its relief—was that of a virgin female from an adjoining State.

The diagnosis of these inflammations in their primary stages I believe to be a matter of considerable difficulty to the general practitioner whose attention is not at all carefully directed to the special affections of women. Many of the cases assume from the beginning the phase of severe rectal,

or even general gastro-intestinal irritation, with more or less cystic trouble, and treatment is directed to the prominent symptoms. The practitioner who is accustomed, however, to doubt mere symptoms in women, and to extending investigation, will not easily be deceived.

But even when the local results of inflammation are established, there being prominent general or constitutional symptoms, we find the general practitioner still erring in diagnosis; hence the specialist is too often called on to witness ravages of effusions or suppurations which ought not to have taken place. My clinical observation satisfies me that very many women have lost their lives from lingering disease, supposed to be, and treated as, hepatic or gastro-intestinal disease, or both, who have clearly been cases of either suppurative or serous pelvic inflammation unrecognized.

But it is under the condition of early and positive recognition of the result of inflammation that I desire especially to urge a point in treatment for which I find no authority save that of personal experience, and which, while it has been eminently satisfactory, appears to me in the highest degree rational.

I purposely avoid entering into extended subdivisions of pelvic inflammations and confine myself to the sub-peritoneal forms, and these as involving *primarily* no pelvic organ, as uterus, ovary, bladder, etc. I think that this is the legitimate range of pelvic inflammations proper; that peritonitis, properly so-called, is not pelvic, but of the abdominal cavity; and that inflammation of any of the organs named is strictly viscerai, and not pelvic.

Limiting myself thus, I ask attention to the fact that there are two distinct forms of what I have defined as pelvic inflammations, the one phlegmonous, and tending to or resulting in abscess or suppuration; the other serous, and tending to or resulting in effusion of serum, with, occasionally, flakes of coagulable lymph combined. I call these forms distinct, because clinical observation has impressed the conviction on my mind, and the conviction is being strengthened as the observations multiply. Though of this, more when I come to cite cases.

In order to avoid tiring the reader, I forbear quoting authorities in detail until on the subject of treatment of these inflammations, commonly denominated abscess and cellulitis, and simply introduce free extracts from the latest edition of Thomas, an author of recognized ability, of extended experience, and one who most probably, in issuing a text-book for students, has not failed to fairly cover the ground.

On the subject of the treatment of abscess, after admitting that no medicinal course can effect a cure, Thomas says:—

“But it is to surgery that we must look most confidently for aid, and in this connection arises the important question as to the propriety of opening such abscesses, the best point for evacuation, and the time for interference.

“Should an abscess in the pelvis show a rapid tendency to point and dis-

charge through a favourable channel, at the same time that no distressing or dangerous symptoms show themselves, it would be the part of wisdom to await the action of nature, for all must admit that there are few localities in the body into which it is more hazardous to cut than this. Even under these circumstances, however, there is danger in delay. Sir James Simpson relates a case which he saw with Dr. Ziegler one day where the abscess pointed decidedly towards the vagina and rectum low down. Feeling sure that it must soon discharge, they left it till the next day, but before that time, to their surprise, it had burst into the peritoneum. This danger, as evidenced by statistics, is not great, and as experience goes to prove that the knife is often employed too rashly, rather than too late, I should strongly recommend the delay of surgical interference until the presence of pus is an absolute certainty. If it be thus delayed, the tissues intervening between the pus and the point of introduction of the instrument become broken down, and a track or sinus is avoided; if two or three abscesses exist near each other, we give time for them to coalesce; and the mass of lymph poured out is liquefied by the suppurative process. Should evacuation be resorted to too soon, all these advantages will be lost.

"Let us suppose a different case, that the patient is suffering grave constitutional signs from the abscess. The answer to the question of the propriety of interference resolves itself into this: if the pus can be certainly reached, it should be evacuated. Should the abscess be deeply seated, on the other hand, so as to make the operation difficult and uncertain, it would expose the patient to hazards greater than those attendant upon delay.

"Dr. Savage believes that 'puncture should be practised early and per vaginam.' Spencer Wells declares from an experience in opening as many as twenty to thirty pelvic abscesses, that he has known of no fatal result. 'I have known,' says he, 'several cases of death where no puncture has been made—some of them very painful cases—when I had urged puncture and was overruled.' As a rule he punctures per vaginam.

"This subject is one upon which no fixed rule can be given. The surgeon must weigh the dangers of operation with those of delay, and decide by the indications presenting in each individual case."

Again, on the subject of pelvic cellulitis, or what he calls "Perinterine Cellulitis," Prof. Thomas says:—

"Should the practitioner be called in the acute stage, before effusion has occurred, or after its occurrence and before its complete organization, leeches should, in the case of a strong patient, be at once applied over the hypogastrium."

In connection with this depletion he recommends constipation of the bowels, refrigerants, and direct sedatives, opium, morphia, and absolute rest. Also milk and unstimulating diet. Also:—

"As soon as the acute symptoms have passed, and vaginal touch informs us that the effused material is becoming organized, a further effort should be made to break up the morbid train before it passes on to suppuration or into chronic induration, by the application of a blister, six by eight inches, over the hypogastrium. This should not be applied before febrile action and the most acute symptoms have disappeared."

This "effort" is in the administration of the iodide or bromide of potassium, mercurials (avoiding ptyalism), laxatives, warm applications to the hypogastrium, and the use of plain or medicated warm vaginal douches. First, on the subject of suppuration.

Prof. Thomas says: "Should an abscess in the pelvis show a rapid tendency to point and discharge through a favourable channel." I wish I could believe that there is "a favourable channel" through which nature may herself pour the pus. The usual channels are the abdominal parietes, the rectum, the vagina, the bladder; or the fluid may burst into the cavity

of the abdomen, or burrow its way down to the inner surface of the thigh. If any one of these results can be called "favourable," certainly discharge *per vaginam* must be that one, and yet both my reason and my observation teach me that this result is least of all to be expected. I have never seen spontaneous discharge through the vagina, while I have seen all the other named terminations. Nor, from the anatomical position and relations of this canal, would I ever anticipate such a thing. The truth is, I have always been thoroughly sceptical in regard to the so-called wisdom of nature in ridding herself of purulent collections. I do not believe there is any wisdom in the business. As a result of inflammations these purulent collections take place, and they may or may not be spontaneously discharged. The whole matter comes under plain physical laws. I have known certainly two women to die from pelvic abscess without any discharge at all taking place. The pus simply burrowed in every direction and ravaged the pelvis, the patient dying from exhaustion consequent on pain and irritation.

Prominent instances are not unfrequently to be seen of abscess of the liver being allowed to kill the patient without discharge taking place, while the medical man waits for this to occur through some "favourable channel," as the lungs, stomach, or bowel. Only about eighteen months ago I opened an abscess of the liver containing fully a pint of pus through the abdominal parietes, and with speedy recovery of the patient; and yet it was the opinion of other medical gentlemen that it would be better to leave the case to the wisdom of nature, who would select one of her favourable channels. And certainly protracted observation has taught me that the early diagnosis of hepatic abscess, and artificial discharge through the abdominal parietes, when practicable, is the safest and wisest mode of practice.

Prof. Thomas quotes both Savage and Spencer Wells as advocates of early puncture *per vaginam*. I cheerfully coincide with these gentlemen.

But Prof. Thomas makes two classes of cases, those in which there are and those in which there are not "grave constitutional symptoms." In regard to the former, arguing against operation, he says, repeating every quotation :—

"If it be thus delayed, the tissues intervening between the pus and the point of introduction of the instrument become broken down, and a tract or sinus is avoided."

This is not legitimate surgical teaching. It certainly will not apply in a case of paronychia, or femoral abscess, etc., and if not in the one case why in the other? On the contrary, while quite a destructive paronychia or femoral abscess will never involve life, or even very long confinement to the bed, pelvic abscess (neglected) does not unfrequently kill, and certainly it can entail untold and long-protracted misery.

Again, says Prof. Thomas: "If two or three abscesses exist near each other, we give time for them to coalesce, and the mass of lymph poured out is liquefied by the suppurative process. Should evacuation be resorted to too soon, all these advantages will be lost."

Here, again, I contend that the surgery is defective. In the first place, is it easy, or feasible, to diagnosticate two or three abscesses near each other? And, granting them diagnosticated, if it be wrong to permit one abscess to wear its way into a so-called "favourable channel," as I have argued it is, can it possibly be right to wait on the destructive process which alone can cause them to coalesce? And, above all, can it be right to keep pus confined in the pelvis for the purpose of liquefying coagulable lymph? Will this surgical proposition be entertained, has it any foundation to rest on in any part of the legitimate domain of surgery?

Again, where "the patient is suffering grave constitutional signs from the abscess," Dr. Thomas says, "the answer to the question of the propriety of interference resolves itself into this: if the pus can be certainly reached, it should be evacuated. Should the abscess be deeply seated, on the other hand, so as to make the operation difficult and uncertain, it would expose the patient to hazards greater than those attendant on delay."

He also says: "This subject is one upon which no fixed rule can be given. The surgeon must weigh the dangers of operation with those of delay, and decide by the indications presenting in each individual case."

Now, what I contend for in the case of pelvic abscess is that the pus can always be "certainly reached." If the existence of pus is established, that pus can be reached, either through the vaginal canal, the rectum, the abdominal parietes, or (if it has taken that direction) through the integument of the thigh. The seat of operation must, of course, depend on the manifest tendency of the tumour which has formed. My conviction is that if early operative procedure is once admitted to be proper (and for this I strenuously contend), the operation per vaginam will take complete precedence. I am satisfied that it must be rarely exceptional to find the purulent collection early "pointing," or inviting the knife or trocar, towards the external surfaces. It is only after long neglect on the part of the patient, or delay on the part of the surgeon, that this result is noticed. Long before this stage, and when the abscess is comparatively small, puncture per vaginam will promptly relieve. More than this, even when there is manifest pointing to the abdominal surface, if the abscess is opened per vaginam we can as thoroughly evacuate it, and drainage is more easily assured, since our opening is in the bottom instead of the top of the tumour.

I think Dr. Thomas is in error when he says the subject of operating on these pelvic abscesses "is one upon which no fixed rule can be given." There is fixed surgical rule in regard to purulent formations in general, and I cannot see why the pelvic region should be made an exception. I certainly am not unmindful of the peculiar anatomy of the pelvis—of the important nerves and bloodvessels which traverse it—but, just as the surgeon who encounters abscess in the region of the pneumogastric and

the carotids is not warranted in permitting destructive dissection by pus to go on unchecked, so is the surgeon who encounters pelvic abscess (which, in consequence of neglect, has killed many a woman) unwarranted in withholding operation in or around the pelvis because of the important anatomy of the parts. After performing and witnessing many operations of this kind, I have never seen one disagreeable, much less fatal, consequence; but, as I said before, I have seen women die because they were not operated on.

I will illustrate the course of the suppurative inflammations by the recital of two cases:—

CASE I.—Last winter a very decent widow woman, about 45 years of age, was found in my hospital ward. She complained a great deal of general malaise, with severe pelvic trouble and pain in the loins, and said she had been sick for over two years. She referred it all to what she called, and what was at the time treated as, an attack of dysentery. She still preserved her *embonpoint* pretty well, could not be kept in bed, looked very well, and had a good appetite.

Vaginal exploration, with external palpation, satisfied me of the existence of a very considerable accumulation of fluid on the right side of the uterus and towards the brim of the pelvis. I diagnosed the existence of pus, and not serum, because of the absence of irritative fever and of the history of the case. Several graduates and nearly all my students looked skeptical, but the long trocar was applied, and fully four ounces of thick yellow pus, without odor, were withdrawn. I enlarged the opening with a sea-tangle tent, and ordered the cavity regularly injected with solution of carbolic acid. Improvement was manifest, but proper attention was not given, and the first thing I knew the opening was closed. Again I tapped the region, this time removing two ounces of pus. Same treatment was adopted. On account of sickness I could not attend the ward for some time, and as she was improving she determined to go home. I have since heard, through an acquaintance, that she considers herself well.

CASE II.—In September, 1873, while I was staying at the New York Hotel, I was called to see a woman who had for some years been a patient of mine in New Orleans. She told me she was on the eve of leaving for New Orleans, and called me simply to decide whether she was pregnant. Her history was as follows:—

In the previous spring she had gotten quite wet on the street during the existence of the catamenia, and was, within a few hours, the subject of arrest of the function, accompanied with pain and fever. She treated herself several days, but growing worse, in my absence she had called in Dr. ——. He treated her during a month or more for malarial fever, and when she called attention to a tumour in the pelvis, he pronounced her pregnant. As soon as she was able to travel he ordered her to the Virginia Springs. At the springs she remained for a month, and although she improved in general health, the tumour grew steadily. On reaching New York she sought the advice of a midwife, who told her she was pregnant; then she called in a physician of standing, who corroborated the opinion.

External examination revealed a perfectly central tumour, somewhat pear-shaped, with the larger end upwards, and fully the size of a five

months' pregnant womb. It was rather tender to the touch, and lacked the elasticity of the pregnant womb. Auscultation revealed no heart sounds or placental souffle. The touch, *per vaginam*, revealed the small unimpregnated uterus high up, and pushed over to the left. The sound, applied through the speculum, proved the depth of the organ to be normal, and in all respects it seemed to be in a healthy condition. The tumour was readily felt in every direction *per vaginam*, it could be caught readily between the external and internal bands, and there was a good deal of mobility.

I promptly told her that I had no doubt her case had been one of pelvic inflammation ending in suppuration, and that the supposed pregnant womb was simply a collection of pus. I also proposed to treat her accordingly, but she said she must positively leave for New Orleans at once. I then advised her to call in Dr. Choppin on arrival. She arrived at home safely, and after some time called the doctor in to engage his attention in what she still believed her approaching confinement. On general examination, he told her she was not pregnant, but that he was inclined to suspect fibroid. Some time elapsed, when all at once the purulent contents of the tumour burst into the rectum, and after a while free discharge also took place through the bladder.

In the spring of 1874 I returned to New Orleans, and Dr. Choppin called me in to see her with him. She was now greatly emaciated, and was passing great quantities of horribly fetid pus by the bladder, the discharge through the rectum having nearly or quite ceased. I saw her from time to time with the doctor, and she seemed to be steadily sinking under irritative fever and discharge. Other advice was sought, and it was finally determined to puncture the sac *per vaginam*, so as to admit of continuous discharge, and also of washing out with proper stimulating solutions. This course was adopted, and it was not long before the discharge became much less, and general improvement began. But it was now found that urine was flowing *per vaginam* with the pus; in other words, that a urethro-vaginal fistula was established. The patient could pass urine naturally through the urethra, but there was more or less constant flow through the vagina. Although the general health improved greatly, there was, of course, a great desire to have this fistula healed, and in due time Dr. C. operated for that end, but the operation failed. At last the patient sought distinguished northern aid for this condition, but again there was failure.

Suffice it to say now, that the general health of the patient was, at last account, good, and we are told that she returned to New York and had the fistula cured. She had previously made an engagement with Dr. Choppin to operate again, but some misunderstanding about remuneration occurred the day before the proposed operation, and she went off to New York.

But I now come to a point in the treatment of pelvic inflammations which has forced itself on me in the course of clinical experience, which I do not find urged by so-called authority, which is of peculiar interest, and which I am not only theoretically but practically satisfied must be admitted as sound practice in the future.

CASE III.—About four years ago I was called to see a poor woman in the lower part of the city who had for two months been confined to her bed, who was greatly emaciated, had irritative fever, and whose general

history, connected with the results of physical exploration of the pelvis, satisfied me of the existence of pelvic abscess. The pelvic tumour could be distinctly felt on the left side through the abdominal walls, and per vaginam it was as distinct as could be desired, pushing the uterus over to the opposite side, but not "pointing" in any direction.

I pushed a full-sized trocar into it immediately on the left side of the uterus, through a Nott speculum, and bearing the point diagonally to the left and upwards and backwards. I never more confidently expected to see pus, but instead there was discharged fully six ounces of clear straw-coloured serum.

Within a few hours after this operation pelvic pain was greatly mitigated, and the patient had a fair night's rest. There was no further *treatment* of the case. She began to eat and sleep well at once, and recovered rapidly and entirely.

CASE IV.—About two years ago Prof. Choppin, of this city, called me in consultation to a case of pelvic inflammation. His patient had been acutely attacked with pelvic inflammation six or eight weeks before I saw her. She was now vastly reduced, presented a most disagreeable appearance, and had distinct physical signs of accumulated fluid on the left posterior aspect of the pelvis. Prof. C.'s full knowledge of the progress of the case made him confident of finding pus.

The tumour was punctured with a long trocar per vaginam, and much in the same manner as Case No. I. Instead of pus there flowed about three ounces of clear straw-coloured serum. From this moment recovery began, and it was rapid and complete.

CASE V.—A lady was taken sick in December with acute pain in the pelvis, soon accompanied by gastric, intestinal, and rectal trouble. She was treated all the winter for the symptoms evinced, but without benefit. I was called to her in the early spring. She was much emaciated, suffering greatly from pelvic pain and rectal irritation, had no appetite, and was clearly the subject of irritative fever.

Physical exploration revealed a distinct tumour about the size of a hen's egg posterior to the uterus, and exceedingly sensitive to the touch. Although the tumour was quite firm, I thought I could detect elasticity, especially when it was impinged upon through her rectum. Through a Nott speculum I penetrated the tumour with a long trocar, and there flowed out about an ounce of clear straw-coloured serum. The operation gave great relief, and she improved rapidly for several days. But at the end of five or six days she felt again the old throbbing pain. I promptly punctured again, this time drawing about half an ounce of clear serum. Noticing the tendency to re-accumulation, I placed a sea-tangle tent in the puncture, let it remain for twelve hours, and thus made a fair opening. From this time forward there was no more trouble, and the patient rapidly recovered.

CASE VI.—A lady from the country came to me about a year ago. She had been married about three years. One month after marriage she began to suffer pelvic pains, they had continued ever since, coition being always distressing, and her health had been gradually undermined, until she had been forced to seek advice.

Physical exploration by means of the speculum and the touch gave distinct evidence of swelling and tenderness on the right side of the pelvis, and the uterus was pushed decidedly to the left. I punctured the most prominent point of the swollen tissues with a fine long trocar, but could get no fluid. A day or two afterwards I punctured again, slightly vary-

ing the direction of the instrument and increasing its size. About three teaspoonfuls of clear serum was drawn. She soon began to feel better, and the swelling diminished. In a short time she returned home. Improvement continued uninterruptedly, until recently she visited me to show me how well she is.

CASE VII.—An unmarried lady presented herself several months ago, having been for some time treated for general symptoms more or less connected with the pelvis, but without avail.

Close inquiry satisfied me she must have been suffering from pelvic inflammation, and I made a careful examination. There was a distinct swelling of tissues on the left and lower part of the pelvis, and she could not bear pressure thereon. The patient was vastly reduced, and nearly bed-ridden.

I punctured through a Nott speculum, withdrew about half an ounce of clear serum, and she is progressively improving. All trace of the swelling is gone, but she is suffering from malarial poisoning, and her general health is not so easily regained.

CASE VIII.—A lady, while travelling in Europe, was seized with severe pelvic symptoms, which at once put her to bed. She was sick for many months, and was attended by several medical men of great distinction. Their final decision in her case was that the disease was malignant. She rallied, however, and returned to this city under the conviction that she was well. A few months after her return she called me in, and I found her suffering from acute inflammatory symptoms in the pelvic region. My diagnosis was pelvic cellulitis. I purged her actively, and in a few days the symptoms entirely subsided. In the course of vaginal examination I detected considerable permanent thickening to the left and posteriorly, but after the acute symptoms subsided there was no tenderness there, and when I proposed to explore the point with a fine trocar she declined. Some months after this she was attacked in the same manner and with the same result. Fully a year or eighteen months after this she was at the North, and was very severely attacked. She called her physician's attention to her history, and suggested pelvic trouble, but stomach and bowel symptoms were so urgent that he ignored the suggested trouble. She was in bed a month, and, finding no relief, she started for New Orleans. I was called immediately on her arrival. The case was prominently clear. A pelvic tumour as large as the fist was formed on the right of the uterus, and rather posteriorly, and it pointed towards the abdominal walls. Dr. Choppin saw this case with me, and, in consideration of the fact that the tendency was towards the abdominal walls, we determined on the use of the caustic potash to produce adhesion of the peritoneal adhesion preparatory to puncture. Some ten days were consumed in this preparation, and in the mean time irritative fever and all usual concomitant symptoms persisted. Finally, we punctured with a medium-sized trocar, confidently expecting to find pus, but instead, we withdrew about four ounces of clear serum containing a few flocculi of lymph.

The relief consequent on this operation was very great. Pain almost disappeared, fever subsided, appetite and cheerfulness returned, and we felt assured of her recovery. Examination per vaginam showed the uterus to be perfectly healthy, though somewhat pushed to the left. The same old thickened point to the right and posteriorly existed, but it was not tender, and I did not disturb it.

A few months after the operation pelvic inflammation again lighted up

without any appreciable cause, and this time a tumour rapidly formed on the left of the uterus, reaching, in a few days, such proportions as to induce prompt tapping with the long trocar through the vagina. This time I withdrew nearly a quart of clear serum. Again there was improvement, but not so marked, and she moved along slowly for some weeks, when a third attack appeared, and quickly resulted in effusion of serum. This time fully four ounces of serum were withdrawn. She rallied partially again, but it now became manifest that the ravages of inflammation which had taken place North were too serious to hope for recovery.

After some weeks it became necessary to tap another point of effusion simply to relieve pain, and again several ounces were withdrawn. At the close of this operation I resolved to puncture the old thickened point first alluded to, and to my surprise fully two ounces of thick yellow pus, without disagreeable odour, came forth. Of course it was desirable to keep this abscess open, and with that end in view a sea-tangle tent was introduced, and the opening very much enlarged. The cavity was every day washed out with a weak solution of carbolic acid, and soon almost completely filled up. But the ravages of inflammation were too extensive, the patient gradually declined; death taking place early in May.

CASE IX.—A few months ago a young married lady came to this city and put herself under the care of Dr. Choppin. He being obliged to leave the city on the very day of her arrival, she was placed temporarily under my care. Her history was briefly as follows:—

For three years she had not been at all well; had almost constantly pelvic trouble, the same being aggravated from time to time. During the past eight months she had been a confirmed invalid; had frequent fevers, loss of appetite and spirits, severe stomach and bowel symptoms, and constant pain in the pelvis. Her condition when I saw her was deplorable. She was greatly emaciated, had constant burning fever, with night sweats, almost total inability to retain food, and almost sleepless. To add to her troubles she was just out of the hands of an ignorant quack, who had treated her for two weeks by severe purgation and narcotism.

Close inquiry revealed clearly that the medical gentlemen who had treated her most of the time in the past three years had regarded the case as one of either uterine or gastro-intestinal disease.

My attention was at once directed to the pelvis, and nothing could be clearer than the existing results of pelvic cellulitis. On both sides of the uterus was extensive thickening of very firm nature, fixing that organ almost immovably in the pelvis, and very sensitive when pressed upon. This condition was manifest to the touch both internally and externally. Of course, the clear indication was to explore the tumour *per vaginam* with a trocar; but inasmuch as Dr. Choppin was to return speedily, I merely addressed myself to the temporary relief of urgent general symptoms.

When Dr. C. returned he agreed with me in my view of the case. We applied the long trocar *per vaginam*, and about four ounces of clear serum were withdrawn. The relief was most gratifying. On the next day the patient sat up, pain was greatly mitigated, fever lowered, appetite returned, and the morale of the patient was good.

Some two weeks elapsed, when our patient unfortunately sat in a strong north wind, and was seized with a pleurisy that nearly killed her. After a few weeks, however, she was again doing well, when, without assignable cause, she was seized with extensive peritonitis, and for days

her life was in great danger. From this attack too she rallied but slowly, and the weather being very warm, and she not accustomed to city atmosphere, we advised her return home. Before her departure we examined carefully and even explored the thickened tissues of the pelvis with the trocar again, but no fluid was found. The local condition was apparently permanent solid thickening on both sides of the uterus, fixing that organ almost immovably in the pelvis. We have not since learned of the patient.

It is in the history of these cases of *serous effusion* that is found the point of chief interest to me, and while I think that, theoretically, there is as positive demand for operation to remove serum as to remove pus, nevertheless it would be almost a hopeless task to convince any considerable number of surgeons to resort to such practice without practical illustration to support the theory.

In contemplating serous effusion into the cellular tissue as the result of inflammation, the profession have been, I think, led astray by comparing the same with effusions into the proper serous cavities—as the peritoneal, pleural, cardiac, etc. The old practice of calomel and blisters to cause absorption has possession of the professional mind, and it is only in extreme cases—and then even at the hands of comparatively few—that physical evacuation is attempted. Medical men will tap an old case of abdominal dropsy which is not the result of inflammatory action, and where the tapping gives no promise of anything better than very temporary relief; but will keep a lung in a long-continued state of compression and suffocation, because the effusion has been the rapid result of inflammation, and fight it indefinitely with calomel and blisters. Looking back on this general class of cases as I have seen them in hospital and private practice during many years, I have no doubt that many a life and much suffering could have been saved by resorting to mechanical withdrawal of the fluid effused. But if this is true in any degree in cases of effusion into the serous cavities, infinitely more so is it in the class of cases we have under special discussion. Let any intelligent man think well over the intricate and peculiar anatomy of the pelvis—let him take one of Savage's admirable plates, and contemplate the wonderful and profuse distribution of nerves, and he must certainly find no difficulty in realizing the fact that effusions and thickenings in this region cannot do otherwise than give rise to not only great local suffering, but to serious general disturbance.

But do not Cases V., VI., and VII. most strikingly illustrate this point? Here were three great sufferers, with general health most seriously impaired. What would be called an insignificant quantity of serum is withdrawn from the affected point in the pelvis, and at once they begin to recover. Cases V. and VI. make the most rapid recovery. Case VII., being complicated with malarial poisoning, will recover her general health more slowly. And in Cases III. and IV., when the quan-

tity of fluid amounted to several ounces, the same relief of suffering and the same extraordinary rapidity of recovery are to be observed. Is any such termination to be expected from the use of calomel and blisters? According to my experience, no.

Case VIII., whose troubles began with the attack in Europe, was a complicated case and very highly instructive. I have no doubt whatever that deposit of pus took place during that attack, and that this deposit was afterwards a constant inciter to pelvic inflammations. It was only the last attack at the North which resulted in effusion, however, and, it not being promptly recognized and relieved by puncture, the general health failed and the local ravages became extensive. Had the pus been early recognized and removed, I believe the patient would have been alive to-day. Suppuration Case IV. cited by me shows clearly how free deposits of pus can take place in the pelvis as result of acute attacks of inflammation, and yet where the acute symptoms subside the patient may get up, improve in appearance, and even work for a living for several years in comparative comfort. After a while, however, active inflammation is relighted and the results will be destructive.

Conclusions.—1. I have no doubt at all that there are two distinct forms of pelvic inflammation—serous and phlegmonous, or suppurative. An attack of either may be abortive—that is, may fail to result in formation of pus or effusion of serum. But, should either pus or serum be deposited, then,

2. I am sure that evacuation is the proper practice; and,

3. Either should be evacuated *per vaginam*.

4. The presence of pus in any portion of the body is not to be tolerated by the surgeon. I contend that the presence of effused serum in the pelvis is not to be tolerated either. As long as it is present, in addition to the pain and prostration present, there is the abiding stimulus to repeated inflammations, and the pelvis can and will be ravaged.

5. Topical applications and internal remedies have no influence on pelvic serous effusions, according to my observation.

This paper has been prepared amid the annoyances and interruptions of professional and other business, and it is not offered as more than a suggestive appeal. To elaborate the subject as it deserves would consume much time and space.

My criticism of the views of the distinguished author quoted is made solely with a view to illustration of the opinions of a large class of men of acknowledged ability, and not for the purpose of arraigning any individual. Prof. Thomas himself introduces the antagonistic opinions of Savage and others. The fact is, I have only touched the subject of the treatment of pus deposits in the pelvis in order to more fully direct attention to the subject proper of my paper, viz., serous effusions.

ART. IV.—*On the Causes of Dyspnœa in Cases of Suffocative Bronchocele, and on the Surgical Treatment most advisable.* By LENNOX BROWNE, F.R.C.S.Ed., Senior Surgeon to the Central London Throat and Ear Hospital; Surgeon and Aural Surgeon to the Royal Society of Musicians; to Her Majesty's Italian Opera, etc., London, England.

THE *American Journal of the Medical Sciences* for October, 1876, contains a most interesting article (p. 374) by Dr. John B. Roberts, on Acute bronchocele with cardiac hypertrophy occurring during pregnancy, and producing fatal dyspnœa. The case illustrating the paper is so typical of the most dangerous form of suffocative goitre, that I would ask permission to make a few remarks upon it, and to express my views as to the cause of the dyspnœa, and also to say a few words on a line of treatment which does not appear to have been considered by the surgeons consulting on this case, but which, by a coincidence, is related in another part of the same issue of the Journal (p. 576).

The pregnancy and the cardiac trouble appear to have somewhat complicated the case, both with reference to discovery of the exact cause of the fatal dyspnœa, and also probably as to treatment; but I do not think they need really have done so. There is almost always uterine complications in cases of this nature, especially in those in which there is derangement of the sympathetic, menorrhagia being the most common form of such disorder. The cardiac disturbance, though diagnosed during life, does not appear to have influenced the case. There was, it is true, "palpitation of the heart when taking active exercise;" but this is a common symptom of bronchocele where there is vaso-motor disturbance. Post-mortem examination showed that "the heart was greatly hypertrophied, but there was no valvular insufficiency."

Dr. Roberts considers at length the causes of dyspnœa under the following heads: 1. Narrowing of the trachea. 2. Cardiac dyspnœa. 3. Nerve compression. 4. Reflex phenomena dependent upon uterine irritation.

1. He starts with the statement that "tracheo-stenosis might undoubtedly be the cause of difficult respiration, but this is more apt to be the case when the isthmus of the thyroid gland especially is hypertrophied." I must beg leave to differ, and to say that this is just the class in which tracheo-stenosis does not occur. I have never seen the trachea compressed from before backwards, *except* "when the bronchocele is post- (I prefer the word sub-) sternal, and consequently cannot project forward as it increases." Dr. Roberts further reports that, after performing laryngotomy, "the operator inserted his finger into the trachea, and could find no narrowing of the tube.

2. Dr. Roberts dismisses the idea that the case was one of cardiac

dyspnœa, with which opinion I presume to fully agree, since the prominent distinctive signs of cardiac asthma were conspicuously absent.

3. I cannot think that nerve pressure was the cause of the dyspnœa. So experienced a laryngoscopist as Dr. Solis Cohen did not notice paralysis of the abductor of either side; but, on the contrary, a spasm of the adductors. Stoerek begs the question when he says that the dyspnœa is paradoxical. I hope, before concluding, to show that it can be reasonably explained.

4. The last suggestion, of uterine irritation, is also very properly held untenable by the author, "in face of the number of cases of goitre where fatal dyspnœa occurred in women who were not pregnant, and in men."

What, then, is the cause of the respiratory distress in these cases? I venture to think it is the interruption in rhythm of the involuntary muscles of the trachea. In all cases of suffocative goitre there is either, as in the substernal variety, resistance to outward expansion, or, as in that under present consideration, bulging inwards of the tracheal wall.

In Vol. XXV. of the *Transactions of the Pathological Society of London* (p. 255 *et seq.*) will be found an account of a case exhibited by me of lymphoma, causing such displacement of the larynx and trachea that the right vocal cord was seen, with the laryngoscope, to be pushed well to the left of the median line, and yet there was "not the least dyspnœa, even on exertion, and the patient could lie in any position; the voice was normal." I there remarked that—

"It is somewhat rare to see such considerable displacement of the trachea with absolutely no disturbance of the respiration. It is well known that while a very slight substernal goitre, or other cause for pressure or constriction of the windpipe low down in the neck will cause distressing dyspnœa, a very considerable enlargement of the isthmus or of one lobe of the thyroid gland will occasion no respiratory inconvenience; but if both lateral lobes of the gland be at all enlarged so as to embrace the windpipe, difficulty of respiration and of deglutition are at once observed."

I may mention that the case is otherwise interesting as being complicated with a bronchocele which had existed from childhood, and also because the history showed that the glandular overgrowth had been distinctly induced and reinduced by pregnancy.

In the present volume (No. xxvii. p. 291) of the *Transactions of the same Society*, I have reported another case of "enlargement of the thyroid gland, principally of the right lobe, displacing the trachea, and interfering with its form." In this case, "with the laryngoscope the right inner wall of the trachea was seen to be pushed in, so that the calibre of the canal was considerably diminished. The trachea was also displaced, but there was nevertheless ample room for the passage of air." In this case the respiration was seriously impeded, attacks of a spasmodic character being frequent. There were other symptoms of a very interesting nature, indicating sympathetic nerve derangement, which, however, need not here be further dwelt upon.

Analogous cases are those in which there is cicatricial narrowing following syphilitic ulceration of the trachea, of which I have seen many instances. The favourite seat is just above the bifurcation as it is crossed by the innominate artery. Attempts to give relief by tracheotomy are almost invariably futile, because the seat of obstruction is never reached. In the majority of cases the surgeon is also astonished to find at the autopsy, that although the constriction is evident, the actual calibre of the trachea at the seat of trouble is but little, if at all, less than that of a medium-sized tracheal tube. Another analogous condition is, that of enlargement of the bronchial glands in the neighbourhood of the root of the lung. Here there is often dyspnœa of exactly the same character as that of goitre asthma, with spasm of the adductors of the vocal cords. There is seldom paralysis of abduction unless the recurrent nerve be actually involved. About two years ago, however, I had such a case. The patient was a lady of about fifty-three years of age. She suffered from occasional attacks of hoarseness, with difficulty of breathing to such an extent that she could not lie down at night. At such time I was enabled to see that the left vocal cord was paralyzed, and I was at a loss to account for the cause. Dr. Quain, in consultation, suggested pressure from enlarged bronchial glands. Under external application of iodine, and internal administration of iodide of iron, this patient got well. She has had one or two slight relapses, always relieved by resumption of the treatment.

In Dr. Roberts' case the bronchial glands are reported to have been enlarged. It is possible, therefore, that in his case there was tracheal compression at two points.

The clinical history of this case is in accordance with the view I have suggested as to the nature of the dyspnœa, though it is deficient in one particular, namely, as to the character of the expectoration. In all the cases I have seen the attacks are characterized by the raising of clear, glairy saliva during the paroxysm, followed, after great efforts, by expectoration of mucus. With this the paroxysm passes away, exactly as in a case of ordinary spasmodic asthma. They may be differentiated from true asthma by the peculiar whoop of the cough, as of air passing through a constricted tube, and producing distinct, musical, harmonic notes. The violence of the attacks, the turgidity of the vessels, the lividity of countenance, and lastly, but by no means least in significance, the termination of the attacks by vomiting, are all eminently distinctive of dyspnœa from tracheal interruption. The paroxysms recurred three or four times daily. Query, were they influenced by food-taking? There is no account of hoarseness, which would have been present had the recurrent nerves been involved to any great extent; nor do I learn that at the autopsy there was any wasting of the posterior crico-arytenoid muscle of either side, a condition which is always present, even after a very short

history of enervation. The want of freedom in the action of the diaphragm is always marked during asthmatic paroxysms.

Had the cause of the dyspnœa been due to pressure on the recurrent nerves—I place the probability of implication of the pneumogastric or phrenic as outside consideration—laryngotomy would have given relief. This is not the case when tracheal constriction is present, though in those cases in which I have seen tracheotomy performed, the violence of the paroxysm has been subdued, as in the instance of Dr. Roberts' patient.

Lastly, the state of things revealed by the autopsy supports the view of tracheal pressure as the main cause of trouble. Though during life the tumour had been more prominent on the right side, the glandular enlargement was found to be of equal dimensions on both sides after death, the tumour on the left side having grown inwards instead of outwards, and it being the left wall of the trachea that was pushed in. The recurrent nerves ran beneath the gland along the sides of the trachea, and the left nerve was smaller than the right. Though the tumour had to be dissected up to expose them, they were not involved in its structure, and there is no reason why, on removing the gland *en masse*, the nerves should not have been exposed lying in their normal position.

Although beside the two questions I proposed to consider at the commencement of this communication, I would like to say a word as to the sympathetic derangement in these cases. I have mentioned in my paper, which appears in the number of the Journal containing Dr. Roberts' article, that in each of the six cases under my care there was globus hystericus, and in three there was marked derangement of the sympathetic. It cannot be supposed that the tumour presses directly on the cervical ganglia, and the cause of this disturbance must be sought, I suggest, in the peculiar, and at present unexplained connection of the thyroid gland with the vaso-motor system. It is, as Dr. Roberts says, much more probable that the thyroid gland is a blood reservoir preventing cerebral congestion,¹ than that it acts, when enlarged, by pressure on the carotids

¹ A most interesting case, tending to support this view, has come under my notice in the last few days. The patient, a married woman, aged thirty-nine, was suffering from an enormous cystic goitre, measuring fifteen inches in its long diameter, and the circumference of the neck at its most prominent point being twenty-three inches. She stated that eight years ago she ran between two brothers who were fighting. In doing so she received a blow on the left side of the throat just below the apple. She immediately felt great pain in the left side of the head, and a swelling appeared in the left parietal region. After applying hot wet sponges for nearly half an hour, the swelling subsided, and was followed by great pulsations in the throat. This sensation lasted for six months, the throat all the while gradually increasing in size, at the site of the blow, until it has reached its present dimensions. The patient is now under treatment. A seton was inserted a month ago, and the tumour is (February 1st, 1877) already reduced to half its former dimensions.

modifying their impulse; for, as a matter of fact, these arteries are always pushed back in cases of goitre, and are *never* pressed upon by thyroid enlargement. Is it not possible that the interference with involuntary muscular rhythm is the cause of disturbance where there is tracheal pressure? In other cases it is certainly due to reflex irritation, for, as a rule, the thyroid glandular enlargement bears an inverse relation to the amount of sympathetic derangement; so that in some cases of Graves' disease, the goitre, if at all present, is decidedly of secondary occurrence and importance.

As to *treatment*, I would strongly urge the importance of the early introduction of a seton as preferable to all other modes. It is devoid of danger; it cannot impede or negative further operative measures of a more radical character, if they be deemed necessary; and I believe the practice will be found universally successful—1st, in giving immediate relief to the respiratory distress; and, 2dly, in producing suppuration and dispersion of the tumour. I shall esteem it a great favour if American surgeons will test this method as the treatment *par excellence* for goitre of a non-cystic variety. For the cystic form, in which, however, there is seldom respiratory embarrassment, the result of Mackenzie's method of tapping the cyst, followed by injection of perchloride of iron, so as to arrest hemorrhage and to convert the cyst into an abscess, leaves nothing to be desired. Where the cysts are multiple, and separated by strong fibrous trabeculae, the seton is more rapid in effect. In very large cysts I should, after having induced suppuration, be disposed to treat them after the method of Mr. Callender (*British Medical Journal*, November 4, 1876), by hyperdistension with carbolized water.

ART. V.—*Simultaneous Ligation of the Carotid and Subclavian Arteries for Aneurism of the Arteria Innominate*. By JOHNSON ELIOT, A.M., M.D., Prof. of Clinical Surgery in Med. Dept. of Georgetown University; one of the Attending Surgeons in Providence Hospital; Member of the Advisory and Consulting Boards of Physicians and Surgeons to St. Ann's Infant Asylum; Columbia Hospital for Women and Lying-in Asylum, and the Children's Hospital.

ABOUT seven or eight cases of simultaneous ligation of the subclavian and carotid arteries, for aneurism of the arteria innominata, have been reported up to the present time. The success which has followed the ligation of these vessels (simultaneously) has not been sufficiently favourable to encourage surgeons to repeat the operation, except under the most pressing necessity, as in the case now reported. *Of the simultaneous*

operations reported, Rossi's case died in six days; Heath's recovered; Hutchinson's died on the forty-first day; Mander's died on the sixth; Sand's living six months after the operation; Lane's some improvement, afterwards rapid increase of the aneurism; Holmes's died in four weeks, and the case, the subject of the present report, terminated fatally on the twenty-fifth day after the operation.

During the latter part of September, 1876, Stanley L., coloured, aged 41 years, married and of good physique, called upon me complaining of a beating tumour on the neck; it was at once diagnosed as aneurism. The tumour was nearly the size of a man's fist, and was situated a little to the right of the mesial line of the neck, the lower margin being nearly over the sterno-clavicular articulation, the upper over the thyroid cartilage. He stated that three years ago there appeared a lump about the size of a walnut, soft at first, then becoming harder. This enlargement remained stationary about three months, when it partially disappeared. About two years ago it again increased in size, with marked pulsation; it remained in that condition until about six months ago, when it rapidly increased in its proportions. The patient's condition at the time he sought advice was deplorable in the extreme, if not hopeless; the poor fellow was greatly alarmed at the rapid increase of the tumour, and he fully appreciated his dangerous condition and expressed his apprehension that death might terminate his existence at any moment. He begged earnestly for relief, and expressed his willingness to undergo any mode of treatment that afforded the slightest hope of prolonging his life. The operation and the uncertainty of its relieving him were carefully explained to him; also to his immediate family and friends. After consultation with several distinguished surgeons of our city, it was determined after careful and repeated examination of the patient to operate on him, the distal (Brasdor's) operation being selected as offering the best chance of success. It was deemed advisable before proceeding, to submit the sufferer to a course of treatment, which, if it did not benefit him, would at least place him in a more favourable condition for surgical interference. As soon as arrangements could be made he was placed in the recumbent position and perfect quiet enjoined, both physical and mental; he was put on dry nutritious but unstimulating diet. Bromide of potassium was administered freely during this period, with the double object of controlling the arterial action and tranquillizing the mind. It was proposed to submit the patient to this treatment for at least five or six weeks before operating, but his condition becoming worse, the aneurismal tumour increasing with alarming rapidity, its pulsation growing more violent, and significant changes in its appearance manifesting themselves, giving unmistakable signs of speedy ulceration, and the patient appealing to his attendants for relief, it was determined to yield to his solicitations and operate at an early date. The patient was removed to Providence Hospital on the afternoon of the 12th of October. On Sunday morning, the 15th Oct., assisted by Profs. Robert Keyburn and F. A. Ashford, with Dr. P. J. Murphy administering the anæsthetic and Dr. Charles M. Ford in charge of the pulse, I proceeded to ligate the primitive carotid in its upper cervical region, and immediately afterwards tied the subclavian in its third surgical division. Among the gentlemen who were present and witnessed the operation, I may mention Charles H. Benni, Prof. Surg. Warsaw Med. College, Russia; Surgeons Wales and Maceoun, U. S. N.;

Surg. G. A. Otis, U. S. A., the distinguished editor of the *Med. and Surg. History of the War of the Rebellion*; Dr. George A. McCoy, Profs. King, Kleinschmidt, and Tabor Johnson; Drs. P. G. Young, Ramsay, Boorman, Eliot, and many others. The patient soon recovered from the influence of the anæsthetic; he was immediately removed to his bed and his right arm wrapped in bats of cotton; beef-tea was given him, of which he partook with avidity; his mind was perfectly clear; there was no cerebral trouble or difficulty whatever. The only inconvenience he expressed after the operation was slight pharyngitis with some impediment in deglutition; these symptoms measurably abated in a few hours; late in the evening an anodyne was administered; he passed a sleepless and uncomfortable night.

Oct. 16. Pulse 110; temp. 99°. Has some slight cough; difficulty in swallowing, accumulation of mucus in pharynx; arm of right side cooler than left; no pulsation in the brachial artery; applied ice to tumour for 15 minutes at a time, then an interval of 15 minutes; pulsation in tumour slightly diminished. R. Tinet. digitalis, grt. 20, to alternate with sol. ferri persulph. grt. 20, three times a day, and potass. bromid. ʒj to be divided in three doses, to be taken during the day. Anodyne at night if necessary.

17th. Pulse 100; temp. 99½°. General condition seems to be better than yesterday. Tumour appears smaller; discontinued cold.

18th. Pulse 100; temp. 100⅓°. Cough quite troublesome, with quantity of mucus in pharynx; slept poorly last night; force and frequency of pulsation in tumour diminished; tumour points a little. General condition improving. Sat up in bed for short time to-day. R. Potass. iodidi, ʒij; aquæ, ʒiiss; syr. simpl. ʒss.—M. S.—Dessertspoonful every 2 hours.

19th. Pulse 100; temp. 100½°. Right hand warmer; cough more troublesome; swallowing and clearing pharynx more difficult. Has slight symptoms of pneumonia.

20th. Pulse 104; temp. 99¾°. Tumour hardening and pulsation feebler; pneumonic symptoms have subsided; sat up short time. R. Potass. iodid. continued.

21st. Pulse 118; temp. 102°. Tumour has a small white bleb on upper left side; slept tolerably well last night; cough less troublesome; sat up a short time in bed to-day; wounds discharging a small quantity of pus; that over carotid more copious than subclavian; circulation re-appearing in right hand and arm. R. Iod. potass. continued.

22d. Pulse 106, and weaker; temp. 100¾°. Has pain in right side when coughing; slept well and eats well; bleb has disappeared, leaving a small red base; cough less frequent. R. continued.

23d, 10 A. M. Pulse 100, and soft; temp. 99½°. Pain in coughing absent; sleeps badly; does not expectorate as freely as yesterday; three small blebs on red base of first one. 6 P. M. Pulse 118, temp. 102°. Tumour hot; right hand warm; is very restless. R. Sol. bromid. potass.

24th. Pulse 116; temp. 103¾°. Blebs have a black spot about one-fourth inch square below them; slept very well; has little cough; tumour seems smaller, is hard at bottom, softer at top and is quite warm; wounds still discharging. R. Sol. bromid. potass. continued.

25th. Pulse 94; temp. 99½°. Ulceration commences, has a small red spot on right side of it; condition good; not so restless. R. continued.

26th. Pulse 90; temp. 98°. Condition still favorable. R. continued.

27th, 11 A. M. Pulse 90; temp. 100° . Is quite cheerful and talkative; sits up a good deal; has some cough. 6 P. M. Pulse 92; temp. $100\frac{3}{8}^{\circ}$. Coughs a great deal and expectorates with difficulty; sleeps better; continues cheerful; ulceration increasing. R. Iodid. potass. substituted for the bromid.

28th. Pulse 90; temp. 100° . Condition about same as yesterday. R. continued.

29th. Pulse 86, temp. $100\frac{3}{8}^{\circ}$. Tumour is becoming longer; ulceration has high edges; pulsation in tumour softer. R. continued.

30th. Pulse 94; temp. $99\frac{3}{8}^{\circ}$. Pulsation in tumour very mild; ulceration extending downwards; slept very poorly and is very restless. R. continued.

31st, 10.30 A. M. Pulse 92; temp. $100\frac{3}{8}^{\circ}$. Got up this morning, dressed himself and was shaved, lay down on the lounge; appears very comfortable; pulsation in tumour very feeble; coughs very little; right hand is quite warm. 12.40 P. M. About 12.30 P. M. got up and while the attendants were engaged walked down the hall to the water-closet; while there the sac ruptured and the blood was thrown out in a jet (quantity lost in the neighbourhood of 16 oz.). Prof. J. Ford Thompson, being at the time in the hospital, was summoned. He speedily suppressed the hemorrhage with compresses of lint saturated with Monsel's sol. persulph. of iron. On my arrival at the hospital I found the patient in a very critical condition; the compresses were yielding to the force of the impulse of the aneurism and I expected an immediate recurrence of the hemorrhage, which would have unquestionably terminated in death. I at once, with the concurrence of Prof. Thompson, determined to inject the sac with the sol. persulph. of iron, Monsel's. The course was hazardous, but it was thought the best under the circumstances. With the assistance of Dr. Ramsay, house surgeon, I injected 3vj of the sol. of persulph. into the tumour. This injection of the iron had the effect of hardening the periphery of the tumour. Later in the day, finding considerable pulsation in the axes of the aneurism, I procured a larger trocar and injected through the cannula 3iiss more of the liq. persulph. into the sac. R. continued.

Nov. 1. Pulse 128; temp. ranging during the day from 99° to 102° . Slept indifferently; is restless; tumour very hard; cough troublesome. 6 P. M. Pulse 118; is calmer; mind feeble.

2d, 10.30 A. M. Pulse 120; temp. 98° . Tumour hard; cough troublesome; mind feeble. 7 P. M. Left hospital at 6 P. M. of his own accord on a stretcher well-propped and wrapped in blankets. Was carried to his home. Ligation on subclavian came away to-day. No hemorrhage.

3d, 10 A. M. Pulse 90; temp. 100° . Slept well; cough slight; mind tranquil; bore removal well; there is a little oozing of bloody serum from around the point of rupture. 2 P. M. Oozing has stopped. Pulse 90; temp. $99\frac{1}{8}^{\circ}$. 7 P. M. Is sleeping quietly. R. continued.

4th, 10 A. M. Pulse 90; temp. 100° . Is delirious at times; rested badly; eats very little; does not cough much; right hand is cool. 7 P. M. Pulse 98; temp. $100\frac{1}{8}^{\circ}$. Has pain in neck; eats very little; cough is very troublesome. R. Morph. sulph. gr. j; aquæ, 3j .—M. S.—Teaspoonful every three hours, and R. continued.

5th, 10.30 A. M. Pulse 106; temp. 101° . The appearance of the tumour to-day is peculiar, the contents of the sac are protruding; the apex is dry and perfectly solid; around the protruding mass a clearly

marked line is formed, not unlike the line of demarcation in gangrene; below the line and protruding mass a space one-third of an inch in width is observed entirely encircling the tumour and discharging bloody serum mixed with puriform matter; sleeps during the day, and at times delirious. R. continued.

6th, 10.30 A. M. Pulse 110; temp. 102°. Very feeble, restless with occasional naps of sleep, rousing suddenly and wandering in mind. Can push the finger entirely around the protruding mass, the sides of which present a red colour; the discharge from the chasm is sanguineous and puriform; dressing of carbolized oil applied. 7 P. M. Pulse 100; temp. 100.9°. Mass coming out slowly, presenting the appearance of a root; black apex and red sides; character of discharge same. 11 P. M. Pulse 114; temp. 101°. Has slight cough, subsultus tendinum; is extremely feeble; mass slowly coming out; can easily pass the finger to the depth of the middle of the first phalanx into the space between the margins of the chasm and the protruding mass; discharge is more purulent; has considerable pain in the neck; sits up on side of bed occasionally; at times delirious; mind easily recalled, and replies to questions rationally; head very hot; perspiration copious. Anticipating hemorrhage during the night; I requested Dr. J. L. Eliot to remain with the patient, with directions, if hemorrhage should occur, to remove the mass and stuff the apertures with lint saturated with the sol. persulphate of iron. R. continued.

7th, 9 A. M. Mass came out while coughing, not a drop of blood was lost; in coming out the mass described a curve from right to left. The tumour had entirely disappeared and in its place a chasm of sufficient capacity to receive at least three fingers. Upon examination I could distinctly see the remainder of the coagulum, rising and falling with the cardiac impulses. Apprehending hemorrhage, I introduced some pieces of lint saturated with solution of persulphate of iron into the cavity. Administered an anodyne. Pulse 120; calm and perfectly rational; expressed hope that he might now recover, since the "swelling" had disappeared; says he is hungry and desired some food, but experienced difficulty in swallowing nourishment when given him.

On leaving the patient, I directed the nurse, his wife, if hemorrhage should take place, to stuff the cavity with lint saturated with sol. persulph. iron. 4 P. M. Hemorrhage took place; a pint of blood lost; faithful to my instruction, the cavity was packed with lint and persulph. which controlled the bleeding. 7 P. M. Pulse 135; growing more feeble. R. continued.

8th, 10 A. M. Pulse 128; very slight hemorrhage all night; expressed a desire to eat, but owing to the difficulty in swallowing refuses nourishment; insomnia last night, though an anodyne was administered; deglutition difficult, accumulation of mucus in pharynx so abundant as to cause choking; continually asking for water. 7 P. M. Pulse 130. Does not eat or sleep; delirious at times, but recognizes those about him.

9th. Died this morning at 6 o'clock.

Autopsy made eight hours after death. Carotid ligature lying loose in the wound. The examination of the body revealed the following pathological condition: The floor of the transverse portion of the arch of the aorta was atheromatous; the roof and parietes of the vessel were greatly thinned; the aortic aperture into the arteria innominata was two inches in diameter, and involved the left carotid artery in its expansion. The

anterior wall of the arteria innominata was developed into a sacculated aneurism; the vertical diameter of the sac was $5\frac{5}{8}$ inches; the transverse 4 inches; antero-posterior $3\frac{5}{16}$ inches. The roof of the sac had disappeared in consequence of rupture and sloughing; the sac was entirely occluded by concentric laminæ of fibrinous coagulum, the coagulum extending into the subclavian and carotid arteries. The clot which came away a few days before death was of the same character but denser in structure; it measured $4\frac{3}{8}$ inches in length, with a mean diameter of two inches.

There can be no question as to the cause of the poor fellow's death. It will be recollected that he had two hemorrhages from the ruptured sac, the first one on the 16th day after the operation, the second on the 23d day, two days preceding his death, making an interval of seven days between the hemorrhages. From the first hemorrhage he lost about a pint of blood; from this loss he did not appear to suffer severely; he soon recovered his strength and spirits. About the same quantity of blood was lost by the second hemorrhage; this hemorrhage was not sufficient to have caused him to sink as rapidly as he did; it is true there was some oozing of blood from the sac while it was undergoing the ulcerative process, but that loss of blood would not have reached four ounces, losing in all 36 or 38 ounces in the course of twenty-five days, which was not thought sufficient to have caused his death. Prof. Thomas Antisell, of our city, has made a suggestion which may aid in solving the difficulty; it is this: he is of the opinion that the coagulum formed in the occluded arteria innominata, together with that of the protruded coagulum, the dimensions of both have already been given, would represent a considerable share of the circulatory fluid,¹ the gradual formation of these clots by abstracting blood from the general circulation was one of the principal factors in producing the rapid exhaustion following the second hemorrhage.

His diet from the day of the operation was nutritious but unstimulating.

WASHINGTON CITY, D. C., January 31, 1877.

¹ The weight of the extruded clot, as examined at the Army Medical Museum, was six ounces avoird.; it was dry from previous maceration in alcohol, and crumbled partially under the finger. In this condition of freedom from water it represents 12.87 per cent. of blood withdrawn from circulation; and is equivalent to a total volume of blood of $46\frac{3}{4}$ ounces, or 2 pounds $14\frac{3}{4}$ ounces.

Note by Prof. Antisell.—The additional clot remaining in the sac was of almost the same dimensions (slightly more), and would, therefore, have about the same weight—the total blood therefore represented by the whole clot would be equal to 5 pounds 13 ounces, which, with the hemorrhages, about 38 ounces, would represent a total loss of blood to the system of 8 pounds 3 ounces. The weight of the man at the period of operation did not exceed 130 pounds, and the estimated weight of blood in such a frame is $\frac{1}{15}$ th or about 10 pounds, out of which on deduction of loss of 8 pounds 3 ounces there would remain in the body only 1 pound 13 ounces at the time of death.

ART. VI.—*Axillary Aneurism; Ligature of the right Subclavian Artery; Death from Hemorrhage on the sixty-second day.* By R. J. FARQUHARSON, M.D., of Davenport, Iowa.

CASE.—Joseph C., æt. 48, carpenter, Irish, married, of temperate habits, of a spare but muscular frame, consulted me March 16, 1876, in regard to a tumour of the right shoulder. Upon examination, a pulsating growth was found, occupying the right sub-clavicular space, and of the size of a hen's egg. Pulsation was distinctly felt in the tumour, which did not extend above the clavicle; no thrill anywhere perceptible; and pulsation was stopped by digital pressure over the first rib. Patient first noticed pain and numbness of right arm about Christmas, 1875, which symptoms he had attributed to rheumatism.

He assigned as a possible cause of the tumour, either working with an adze (an unusual tool with him), or lifting some heavy door frames, in the making of which he had been engaged the past summer.

As the tumour was quite small, the pulsation entirely controllable by pressure, and as the patient was very averse to any such operation as ligation of the artery, it was determined, in consultation with Dr. Peek and Dr. Cantwell (his family physician), to try milder means. At first, direct digital pressure was resorted to, and upon the very first trial an incident occurred which gave great hopes of final success. The patient was seated in a chair, and while the circulation was completely stopped by the pressure of the thumb, he complained of a sudden pain darting down the arm.

Upon immediate examination, I found the tumour full, firm, and without pulsation, as was also the artery at the wrist; I quieted the agitation and alarm of the patient, which were excessive, and keeping my hand on the tumour, remarked that the pulsation did not return for three or four minutes, and then very gradually, it being fully ten minutes before the full force of the pulsations was restored.

These symptoms indicated, almost without doubt, the formation of a clot, which was while yet soft, broken up and washed out by the returning circulation. I then thought had we been prepared for such an unexpected event, and been able to keep up the pressure, or had secured the more perfect formation of the clot by a bleeding from a large orifice, we might have cured the aneurism by less than ten minutes' pressure.

Direct digital pressure was kept up in a desultory and intermittent manner for several weeks, and then abandoned as useless, and insupportable to the patient.

A course of subcutaneous injections of ergotin was then tried, the following formula being used: *R. Ergotin (Bonjean's or Squibb's), grs. xv; aquæ, ℥ lxxv; of this, 5 ℥ = 1 gr. ergotin, was injected at first; this was rapidly increased to 15 ℥ = 3 grs. ergotin, beyond which quantity it was deemed imprudent to go, owing to a very unpleasant feeling in the head, attended by an instant flushing of the face.*

These injections were continued every other day, and then every third day for six or seven weeks; they were never used in the vicinity of the tumour, but in either arm; no local effect beyond the formation of a slight nodule at the site of the injection, or a slight bleeding, was ever noticed; there was no inflammation, no abscess, nor indeed any of those unpleas-

ant consequences so frequently noted as following the subcutaneous use of ergotin. This I attribute to the omission of alcohol and glycerine from the formula.

I omitted to state that immediately after the commencement of digital pressure a thrill could be felt in the aneurism and its vicinity; this thrill was never afterwards entirely absent, though its strength and distinctness varied from time to time.

The general effect of the ergotin, after the full dose of 3 grs. was reached, was to diminish the calibre of the arteries, making the pulse smaller, and more eord-like; it also rendered the pulse slower, and after a while, it appeared, by lessening the impulse of the heart, to diminish the size of the aneurismal tumour, but it never increased its hardness, *i.e.*, there was shown no attempt at coagulation of the contained blood.

June 15. In consultation with Dr. Cantwell, it was determined to try ergotin, combined with indirect pressure.

The affected limb and shoulder, having been covered with a layer of cotton wadding, was enveloped in a bandage loosely applied, and rendered fixed or immovable by soluble glass; over the aneurismal tumour a hole was cut in this case or shell, a hollow India-rubber ball inserted, and pressure made by a few turns of a figure of 8 bandage about the shoulders. Enough pressure was made to affect the pulse somewhat, but not enough to cut off entirely the circulation, or to distress the patient too much.

This contrivance appeared to answer the purpose very well, as it controlled the circulation without stopping the return of blood by the veins; it appeared also to diminish the size of the tumour, and was not very painful. It was adjusted every two or three days, an injection of ergotin given, and was thus continued for more than a month; at this time, when it was removed entirely for the purpose of renewal, we were much disappointed to find that there had been no real diminution of the tumour; it was in fact only pushed up under the clavicle, out of the reach of the finger when applied through the hole in the outer casing. The patient now declared himself worn out and disgusted with all other treatment, and ready for the operation of ligation. But as the tumour was quite small, and there were no urgent symptoms, it was determined to defer the operation for a few weeks, until the advent of cooler weather.

This delay came near proving a fatal one, as the history of the case will show.

Leaving home on September 1, and returning on the 23d, I found the patient in the most perilous condition. The tumour was now as large as a cocoa-nut, extending from slightly above the clavicle down to the armpit; the whole arm was swollen; the skin tense and shining over the tumour; pulse 100 in each wrist, with some thrill in the right. Patient had a haggard countenance, and suffered so much pain as to be unable to sleep. A cough with which he had been afflicted for years, was now very troublesome and dangerous, as rupture of the distended aneurism was threatened at each recurring paroxysm. Tr. aconite, \mathfrak{m} 5, q. h. 4, with tr. opii at night were ordered; this quieted the circulation, and afforded the patient two or three good nights' rest, which he had not had for some time.

The history of the progress of the case during my absence is thus related by Dr. Cantwell: For some ten days or two weeks after my departure, things remained *in statu quo*, but about the 15th, the tumour sud-

denly began enlarging, and attained the most, if not the whole of its great size in three or four days. Evidently the nature of the affection had changed, the true aneurism having burst and become a false one, and there was no more room for delay. Accordingly, on the 28th September, at 2.30 P. M., with the assistance of Drs. Peck, Middleton, and Cantwell, and in the presence of Messrs. Bell and Kemmerle, medical students, and of Mr. Schlegel, one of the Regents of the State University, I proceeded to tie the right subclavian artery.

Operation.—The patient was etherized, and here one of the difficulties of the operation presented itself. As stated, the patient had for years been subject to a violent and harassing cough, of a paroxysmal nature. This was now produced in a high degree by the ether, and once or twice after the incisions were made, the operation had to be suspended, and not only the tumour, but the exposed jugulars seemed to be in imminent danger of bursting.

The usual incisions for ligaturing the subclavian were made. In the lower triangle of the neck the external jugular vein was exposed, which was tied with a double ligature and cut across. A slight opening having been made in the deep fascia with the scalpel, a passage was made to the scalenus anticus muscle by the handle of the knife, and by careful scratching with the fingers. In this proceeding, a vein communicating between the external and internal jugular was cut, and immediately tied. When the cavity thus made was sufficiently cleared out, at the bottom the subclavian artery could both be felt and seen. A common aneurismal needle was then passed under the artery, and upon drawing the knot all pulsation in the tumour and in the arteries of the limb immediately ceased. At the close of the operation the patient was most profoundly narcotized, and was again and for some time in imminent danger of death from suffocation by the great accumulation of mucus in the trachea and bronchial tubes. During the night he was much annoyed by a cough, which gradually grew better, as the expectoration became more free. For some days no untoward symptoms occurred, the pulse being about 90, and a good night's rest being secured by 35 drops of Squibb's compound solution of opium.

Oct. 9 (11th day). Pulse 84 (sitting up), good and full; the faintest possible pulse can be for the first time detected in the right radial artery, which is stopped by a slight change in the position of the arm; the greater portion of the tumour, though greatly reduced in size and tension, is yet soft, and gives a sense of fluctuation to the touch.

17th (19th day). Tumour soft and fluctuating all over, inclined to point in the axilla.

24th (26th day). Abscess has a crepitant feeling just beneath the clavicle, has opened in the axilla, and is discharging a large quantity of highly putrid blood.

Nov. 3 (36th day). 9 A. M. Called suddenly, and found patient sitting up and supported by his wife; face blanched and covered with a cold perspiration; a great hemorrhage had suddenly occurred, a quart, at least, of blood being caught in a basin, beside what was in the bed-clothes, oakum, dressings, etc.

The bleeding had ceased before I reached him (say in 10 minutes). He was laid in bed, the dressing removed, the orifice and lower portion of the cavity stuffed with pledgets of cotton-wool saturated with Monsell's solution, a compress placed in the axilla, another just under the clavicle, and the whole bound up firmly with turns of a figure of 8 bandage.

Brandy was rather freely given, and by 12 o'clock reaction was fully established, with a pretty good pulse at 112.

7th (40th day). Pulse 110. Removed dressing and the hard plug of iron, cotton, and blood. This gave vent to a large quantity of pus and putrid blood, which flows from a cavity, apparently extending from the axilla nearly to the sternum, and from the clavicle somewhat below the nipple.

10th (43d day). Removed main ligature.

15th (48th day). 3 A. M. Called suddenly to patient on account of hemorrhage. Reached him in a few minutes to find him, as before, sitting up, almost in a state of syncope, with blanched face, cold brow, rapid and thready pulse. As the bleeding had already stopped I did not remove the dressings, but placed the patient in bed and gave brandy.

10 P. M. Called to patient on account of bleeding, which proved to be venous, and was found trickling slowly from the lower orifice. Plugged with a pledget of cotton-wool wet with Monsell's solution.

27th. 6 P. M. Called suddenly, and reached the patient in less than five minutes, to find him almost moribund from a hemorrhage, which came from the lower orifice, of a bright red colour, and in distinct jets. Plugged with cotton and Monsell's solution.

28th (61st day). 8.30 A. M. Called suddenly, and found patient in a fainting condition, though there was no bleeding externally.

29th. At 1 P. M. was called and found blood oozing from a number of cracks in the most prominent part of the tumour in the axilla; plugged the largest one; the whole seemed in imminent danger of bursting, which would likely take place from coughing, but at 11.45 P. M. he quietly passed away.

30th. *Section cadaveris* 12 hours after death.—The fibres of the pectoralis major were of a dirty-yellow colour, and much weakened, contrasting strongly with the bright red of the other muscles. Upon cutting through the great pectoral an enormous cavity was displayed, reaching from the clavicle to a point below the nipple, and from the origin of the great pectoral to the shoulder-joint; with a branch cavity of large size, extending backwards alongside of the capsule of the shoulder joint, ending in a large pouch between the scapula and the ribs; and yet another branch, a smaller one, extended down the sheath of the brachial vessels, with the brachial vein hard and knotty from phlebitis, but the artery had remained intact and pervious. The whole of this cavity was lined with a dense membrane, which had a smooth, shining surface, stained with blood, except in the vicinity of the orifice, where it presented a rough, ragged, and blackened appearance. In the upper part of the cavity, just below the clavicle, could be seen the remnant of the original sac, which was one and three-quarters of an inch long, and from a half to three-quarters of an inch wide. This strip was quite smooth, was on a level with and firmly imbedded in the dense membrane, ending below in a slight dilatation of the axillary artery, with the open orifices of two arteries; above the remnant of the sac ended in a conical pouch from which protruded a plug of fibrine, having much the appearance of a nerve cut across, it was easily removed, and from its softness was deemed quite recent. It was at first thought that this plug might be traced to an artery opening into the upper part of the sac, or into a pervious part of the artery between the sac and the obliterated artery, but on a more careful examination, after the re-

removal of the parts, no such communication was found; indeed the obliterated vessel extends down to and joins the upper angle of the sac.

The heart was larger than normal, the right side being filled with a dense fibrinous clot. The arch of the aorta with the right subclavian and the axillary to where it disappeared under the above membrane (say one inch below the sac), was removed and carefully examined with the following result:—

There is undoubtedly a considerable enlargement of the aorta, the circumference of the middle part being somewhat over six inches, while the end sections, just beyond the valves, and just beyond the origin of the left subclavian, have diameters respectively of one and a quarter and one inch.

The internal surface of the aorta was thickly studded with atheromatous plates, which had a pink colour when viewed across the outer membranes, but a yellowish or fatty appearance when seen from within. On the arch, and near the origin of the innominate artery, is a pouch or protrusion, evidently a young aneurism; this is marked by a dark spot on the outside, and when the vessel is inverted the little pouch is found to have a diameter of half an inch, and nearly the same depth; the whole is of a dark purple colour, which remains after maceration. Just within the margin there is a groove or furrow which is circular, and marks the extent of the atheromatous plate, which is the foundation of this beginning aneurism.

The cord-like or obliterated artery is three-quarters of an inch long, and extends from the sac, which it joins, to within half an inch of the thyroid axis, which is the first branch above. The exact position of the ligature cannot be well made out in the removed specimen.

The information in regard to the source or sources of the hemorrhages, afforded by this examination, is undoubtedly very imperfect and rather negative in its character.

From the history of the case, of the four hemorrhages, the first was arterial beyond a doubt; the second was of a doubtful nature, but was probably venous; the third was venous, as proved by inspection; the last was truly arterial, and spouted from the orifice in distinct jets.

The whole history of this case seems to show, that in axillary aneurism, after the bursting of the sac, the Hunterian operation of tying the subclavian is not to be depended on; but that we must resort rather to Syme's plan, or, what I should deem preferable, the plan suggested by Dr. T. G. Morton, of Philadelphia, in the account of his celebrated case (*Am. Journal of Med. Sciences*, July, 1867), which consists in first tying the subclavian as usual, then laying open the cavity, and tying the axillary, both above and below the ruptured sac.

Had this plan been pursued in the present case, the result might have been otherwise.

But it will be seen, that at the termination of the ligation, the patient was in imminent danger of asphyxia, from the combined effect of the ether and the accumulation of mucus in the bronchial tubes; thus our whole attention had to be devoted to saving the patient's life, which was only achieved after many hours' labour.

The cavity was not laid open at the time of either of the arterial

hemorrhages, from the fact that both times the sudden loss of blood was so great as to bring the patient to death's door in a few moments, and nothing seemed possible but to stop the bleeding by plugging up the sac.

The disproportion between the apparent loss of blood externally, and its tremendous effect, is now explained by the great size of the cavity, into which the blood was poured, and into which it continued to flow for some time after the plugging, leading at the time to the suspicion of an internal hemorrhage.

ART. VII.—*Case of Amputation at the Hip-Joint. Successful Result.*

By GEO. D. TOWNSHEND, M.D., of Boston (Highlands), Mass.

IN April, 1871, while I was practising in Norfolk, Va., I was requested to visit a well-developed negro lad, nineteen years old, named Alex. Prior, who, about ten days before the date I was called to see him, received a punctured wound of the right leg; the inflicting instrument being a medium sized penknife blade in the hand of a comrade with whom Prior was quarrelling. The wound was not over half an inch in length, and was situated at the antero-external aspect of the external condyle of the femur, on a line one inch above the upper edge of the patella, and about half an inch to the outside of a line perpendicular to the external edge of the patella. Prior stated there was considerable resistance experienced when the knife blade was withdrawn, and followed by quite free hemorrhage and a dull, deep-seated pain. The bleeding ceased spontaneously, and the pain subsided in a few hours. Meantime, the boy had walked to his home, not far distant.

In a few days after reception of the wound, active symptoms of inflammation supervened, accompanied by sharp, lancinating pains about the knee-joint, and dull, deep-seated pain; "pain in the bone," as Prior expressed it, extending up the thigh. Inflammatory features, with consequent suffering, increased to such an extent that, at the time above referred to, about ten days after the primary injury, Prior concluded professional service was necessary. I found the lad lying on a bed, inclined to his right side, with knee and thigh flexed and everted. Any effort to move the greatly swelled limb occasioned excruciating pain about the knee and above it. Relatively, the swelling was less below the knee. He had high fever, quick, rapid pulse, no appetite, and, except in very short naps, had been sleepless for forty-eight hours previous to my seeing him. After careful examination I could not detect any fluctuation, but very aggravated symptoms were apparent. As Prior would not eat, I enjoined a good supply of milk and whiskey, and free use of morphia to relieve pain, with anodyne and cooling applications to the knee and thigh. Next day the patient was more comfortable under the influence of the anodyne; no other change. This condition remained about the same for several days, when I was summoned to Philadelphia very suddenly, and was detained there about two weeks. Before I started I told Prior to continue the treatment I had previously directed, and in case of my

being absent more than three or four days, to call in some other physician.

On the day of my return from Philadelphia, Prior sent for me with the accompanying message that he "had not called in any other doctor, and was worse." I visited him before night and found his symptoms much aggravated. High fever; quick, frequent, and feeble pulse; extreme pain—*facies dolorosa*. The limb was in the same position it was when I first saw it; Prior being unable to move it or to tolerate its being moved. It was much swelled, but at this time the thigh was flattened transversely, with distinct fluctuation at its lower third. I made a free incision at the outer side of the upper part of the lower third. The opening afforded exit to a free flow of darkly-streaked, sanguinolent pus. This afforded slight relief in the next twenty-four hours, but without any favorable change in the lad's general condition. I directed the best diet his surroundings would afford, whiskey freely, and morphia in gr. i doses, every two or three hours if required; these doses of the anodyne barely controlling the pain within toleration. He always defined the pain as "deep" and extending more or less from the knee to the groin. Within a few days I made several free, deep incisions to the outer side of the thigh. Pus discharged from each opening. At this stage of the case, the knee did not exhibit as much pain as the thigh along its whole length. Prior would not take any nourishment except in the form of milk and whiskey.

Before this period of my attendance on the case, I had been convinced that, however the knee-joint might be affected, its condition being obscured by the extensive swelling, all the symptoms confirmed me in the diagnosis of the development of diffuse suppurative periostitis of the femur, of its greater portion, if not of the whole bone. Evidently, Prior was failing, sinking under the profuse suppurative drain and the conjoined exhaustion resulting from the long-continued pain and consequent sleeplessness.

I explained to him the gravity of his condition and the danger indicated by his symptoms, and advised him to take an anæsthetic and permit me to pursue the necessary course to try to save his life. I told him probably it would be necessary to remove the limb at his hip-joint. He grasped at any prospect of relief, whatever the sacrifice, and remarked, "I am ready, I would rather die than suffer this way. I can't stand it."

I called on Drs H. P. Ritter, W. H. Shepherd, Jos. B. Whitehead, R. H. Harris, and J. Lewis to aid me with their counsel and assistance. They most cordially and efficiently responded. Mr. P. H. Ritter was present at the operation and rendered useful service.

A day or two later, finding my patient could not endure his condition longer, I operated. When the gentlemen requested to assist me met at Prior's residence, we all concurred in our opinion of the boy's evidently critical condition.

Doctor Whitehead took charge of the anæsthetic (Squibb's chloroform). After giving Prior a large draught of whiskey, and when he was sufficiently under the influence of the chloroform, he was removed from his bed to the firmest table the premises would afford, and placed in a suitable position, with his head low. Complete anæsthesia being obtained, several exploratory incisions were made down to the bone, along the outer aspect of the thigh, revealing a detached periosteum up to the trochanters. We concurred that removal of the limb near or at the hip-joint

would offer the patient the greatest safety. Severe as would be the proposed measure, we concluded it would give him a better prospect of recovery with a clean stump, than it would to risk the imminent probability of the accompaniments and sequelæ of necrosis of any remaining portion of the femur. Owing to the periosteum being loosened so high up, I decided to amputate at the joint, feeling assured that in the boy's condition, and with his meagre surroundings, entire removal of the limb would be the better course. Anæsthetic well tolerated so far; my professional assistants appointed their part in assisting. I proceeded leisurely to operate, being decided to take the method I did. 1st, to insure little hemorrhage, a slight excess of which we all felt would be fatal to the patient; and, 2d, in order to leave comparatively less muscular tissue to present subsequently a suppurating surface. The limb was elevated and bandaged. I then made a semicircular incision of the skin (convexity downwards) from the line of the adductors, near the serotum to a point a little posterior to midway between the anterior superior spinous process of the ilium and the great trochanter of the femur. The length of this skin flap, at its greatest convexity from the line of Poupert's ligament, was three and a half inches. It was dissected up and turned back on the abdomen. At this point the patient showed some intolerance of the anæsthetic, and before I proceeded further, he was permitted to rally and a few draughts of whiskey administered.

After re-establishing anæsthesia, the femoral artery and vein were raised and separated, and both vessels ligated just below Poupert's ligament, and then severed below the ligatures. The anterior crural nerve was cut off in a line with Poupert's ligament. Dr. Lewis now applied digital compression near the umbilicus, upon the aorta. Prior was much emaciated, and the abdominal portion of the vessel could be easily reached. Next, the muscles anterior to the joint were severed near their tendinous portion, and the capsule of the joint exposed. This was incised, the limb suitably rotated, and the ligamentum teres cut. The large scalpel used until this time was exchanged for a fourteen inch amputating knife.

This was carried behind the head of the femur, and the greater and lesser trochanters. The heel of the blade engaged at the internal angle of the convex anterior flap, and the point at the external angle. The posterior flap was formed by proceeding well towards the posterior part of the muscles of that portion of the thigh, in order to cut off, as the knife advanced, most of the muscular tissue of the posterior group.

This flap was about nine inches in length. The remaining arteries, six in number, were tied; in all, eight ligatures, including femoral artery and vein. Compression of the aorta was removed without occurrence of bleeding from any vessel. The amount of blood lost in the operation was not over three ounces. The chloroform was discontinued and an attempt made to give the patient stimulant, when suddenly his pulse and respiration became almost imperceptible, and his face exhibited failure of the circulation. Resuscitating measures were actively employed for fully twenty minutes before Prior gave satisfactory indications of his going to afford a future history of the case. Finally, he swallowed considerably more whiskey, and soon his circulation and breathing were satisfactorily re-established. His body and remaining limb were wrapped up to retain warmth. The stump was left undressed nearly an hour. Then the cutaneous edges of the flaps were approximated and retained

by three silver wire sutures and intermediate strips of adhesive plaster. Over these, on the whole line of the wound, a compress was applied and long strips of plaster were used to retain it. The boy was placed in his bed with ample covering over him, and we left him as comfortable and in as good a condition as could be expected. Directions were given to administer whiskey to him every two hours and milk *ad libitum*.

During the afternoon, after the operation, I examined the amputated leg, and found pus in the capsule of the knee, and a small opening near the site of the original punctured wound. The cartilage was superficially softened and disorganized, and the periosteum was detached, and detachable on the anterior and lateral surfaces of the femur as high up as the trochanters. Above—about the neck of the bone—it was still firm. The head of the femur was healthy. The surface of the shaft presented an churitized appearance.

In the evening I saw Prior again, and found him very comfortable. In the course of the afternoon he had taken about one grain morph. sulph., and obtained some sleep. When he was asked how he felt, he replied, "Better; my pain has all left me; I think I shall get well now!" About the third day after the amputation, he had considerable fever with rapid pulse of increasing volume. Marked pulsation of the right femoral artery in the stump. The whiskey, of which he had been taking freely, was diminished, with longer intervals between draughts. Milk *ad lib.* continued. Three drops of Squibb's fld. ext. of veratrum viride were administered every three hours, with occasional quarter-grain doses of morphia. Next day he was better—pulse about 100. No marked fever. Within a week after the amputation, the veratrum had reduced the pulse to 70 per minute; sometimes as low as 65, without producing any gastric symptoms. In varied doses the veratrum was continued until the thirtieth day. After the early sanguinolent oozing, pus appeared in very moderate quantity. At no time did the daily amount exceed three ounces.

Excepting a small piece of the cutaneous portion of the extreme end of the posterior flap, which sloughed, most of the approximate surface of the flaps was united in a few days. No specially new feature in the case presented until the twenty-first day, when suddenly, that afternoon, secondary hemorrhage occurred, with loss of six or eight ounces of blood. Anticipating such an accident, I had previously instructed several inmates about the house how and where to make compression, and to maintain it, while a messenger was sent for me. My instructions were followed, and probably saved the boy's life. I was visiting other patients when the message reached my office, and I did not arrive at Prior's until fully two hours had elapsed. Pressure was still being maintained over the surface of the stump, and also more or less perfectly on the aorta, near the umbilicus. Upon examination, I found the hemorrhage had ceased. I bathed the stump, and applied a large firm compress over its whole surface, retaining it in place with long, two inches wide strips of plaster. I stationed the boy's father in the room, with imperative directions not to leave it for any purpose. No further hemorrhage occurred. At the thirtieth day all the ligatures had come away, except the one put on the femoral artery. That remained and seemed quite firm until the forty-eighth day. On the forty-sixth day, being convinced this ligature was retained by its knot and loop being compressed by the tissues of the stump, or by the entanglement of some slight fibrous fila-

ments in the loop, I attached a piece of rubber cord of moderate elasticity to the ligature, and fastened the other end to a piece of adhesive plaster applied to the convex portion of the stump, so that the weight of that part of the stump, and the elasticity of the rubber cord, would maintain a moderate traction. At my visit, two days later, I found the ligature free.

Prior soon got about on crutches, and rapidly gained flesh. Within a few months later he removed to Williamsburg, Va., and has continued to reside there. In November, 1876, he came to Norfolk, at my request, and Mr. J. Webster, photographer, took three negatives for me. At the above date, almost six years after the amputation, the stump was excellent, with a good and not redundant fleshy pad below the tuber ischii.

Although Prior was thankful and grateful for his recovery, even at the sacrifice of so important a member, he was much depressed at his loss, for a year or more after the operation. He felt he was incapacitated for getting a livelihood. So he sought the pseudo-balm of intemperance, and now relates he "often got drunk, and would tumble down on his crutches; but, if he could get the crutches out behind him," and make his left leg the third of the tripod, "a barrel of apple-jack could not trip him up." For the last three years he has reformed, and "joined the church," and now has a small patch of ground that he cultivates. Does part of his own ploughing and planting. He balances himself with one crutch, and cuts his own wood (felling trees). Says "he can mount and ride a horse as good as any other nigger in de county." He never has any pain or discomfort in the stump, but he "thinks it is mighty funny that he sometimes feels his leg and toes itch. Don't see how dat can be, when dat leg was done rotten long ago?" In the winter, and in spare summer hours, he mends shoes, etc. In November, 1876, Prior was 5 feet 11 inches in height, and weighed 170 pounds.

108 Warren Street, Boston (HIGHLANDS), Mass.

ART. VIII.—*New Investigations in Respiratory Pathology.* By EDGAR HOLDEN, M.D., of Newark, New Jersey. (With a wood-cut.)

THE following remarks and cases are presented in the belief that anything which conduces to the early detection of pulmonary disease will be of interest.

Especially is it hoped that this will be the case with anything that supplements or confirms the brilliant discoveries of Waldenburg and the subsequent observations of Eichhorst, Riegel, and Lassar.

It is a sad commentary on the giant advance of modern medicine, that the "reiz" of consumption, whether tubercular or phthisical, "the rift

within the lute," the ultimate and peculiar beginning of the most fatal of modern diseases, should have escaped observation. Step by step it has been traced back until the theories regarding protoplasm have allowed it a hiding place in bioplastic material, and failing to define its nature or its cause, science has unconsciously completed the circle of reasoning, beginning with a disease of lymphatic development, and ending with some indefinable change in the lymph itself; the stamp of early decay inherent to the protoplasm as the features and characteristics of the father are inherent to the spermatozoon. When we have adapted the work to be done by assimilating organs to their weakness, we have done all that science can do. Only to do this early is to cure, and as the stage of the disease is to us the vital factor in the problem, the earlier the disease is detected, the more sure will be the favourable result.

The hypothesis would, perhaps, to-day be met with ridicule, that the source of continually regenerated protoplasm in the body is a definable one, and that through it the vigour and longevity of the protoplasm or bioplasm may be influenced, but I have reason to believe that this will yet be proven and actual results be presented that will revolutionize existing theories.

Till then, however, the detection of the disease, before it is self-evident, and differential diagnosis when error is possible, are essential to success, and the following postulates from German investigators must stand as of inestimable value.

"In chronic bronchial catarrh and emphysema there will be found *expiratory insufficiency*."

"In phthisis and tuberculosis there will be found *inspiratory insufficiency*."

"In health expiration bears a definite and ascertainable ratio to inspiration, being usually *in excess*."

These postulates arrived at by pneumatometry are more or less familiar to the profession, but, as remarked by Riegel, "Unfortunately the method, as I can verify by numerous personal experiments, presupposes some practice, and tact on the part of the patient, without which errors may very readily occur."

The verification in this country, then, of these important truths and their application in daily practice has hitherto not been made available, and the following cases are presented with the method employed as a new contribution to pneumatometry.

Any one who has listened to a siren (the instrument for measuring the velocity of sound waves, and consequently of musical notes), must have been struck with the exceeding sensitiveness of the instrument, and the ease with which the ear can determine the changes from note to note. As this instrument is essentially but a disk perforated with minute

diagonal holes, with a thinner one perforated with a similar number of holes sloping in an opposite direction and so attached as to revolve on a central axis, it may be readily fitted to a glass cylinder (as a piston), and if now this be attached to a spiral spring in the cylinder, to act like the weighing apparatus so generally in use; an instrument is completed which when graduated under steam pressure, furnishes a portable and reliable pneumatometer requiring but little tact, and enabling the physician to detect impairment of inspiration or expiration, and the relation of the two by either the eye or the ear.



A. Glass tube covered with leather.
B, B. Silver end pieces.

C. Expiration end.
D. Inspiration end.

The engraving shows the instrument used during the past year, and the cases appended are selected from one hundred recorded cases examined with it in private practice. It is nine and a half inches long and one inch in diameter. It should be observed that, if when inspiration is performed through the instrument the musical note rises steadily and without wavering, there can exist no interrupted or jerky character to the current, for such would inevitably produce a wavering of the note; the same is true of expiration through the opposite end of the tube. The siren, although perforated and so forbidding dangerous resistance to the action of the lungs, is driven down the tube, and an index pushed before it records the maximum of power. This rarely exceeds a pressure of two pounds avoirdupois, and the graduated scale on the tube gives one-eighth of a pound or two ounces to each subdivision. This pressure is of course an arbitrary matter, and governed by the size of the perforations of the siren. As, however, the exact pressure in ounces is of no importance, but the relation only of different examples using the same instrument, and the relation of the inspiratory and expiratory current are to be ascertained, the figures will be given as fractions, $\frac{1}{8}$ representing one pound avoirdupois.

Three important points have been aimed at in the following records, which are copied as recorded that the deductions may be justified or condemned.

- 1st. The normal relation of expiratory to inspiratory power.
- 2d. The inspiratory insufficiency of consumptives.
- 3d. The expiratory insufficiency of bronchial catarrh and emphysema.
- 4th. The significance of the jerky and interrupted character of respiration in disease.

No.	Name and Date.	Age	Sex	Character of Respiration.	Power of Insp. Exp.		Disease.	Result.
					ozs.	ozs.		
10	A. L.—May.	18	F.	Clear and even.	20	20	Suffocative bronchitis.	Recovery.
13	W. N.—May.	32	M.	Insp. wavy.	2	8	Tubercular laryngitis.	Death.
14	A. G. H.—May.	30	M.	Neither exp. or Insp. wavy.	12	12	Consolidation at both apices, with occasional hæmoptysis. Debility, night sweats, emaciation.	Sent abroad.
	" June 3.			" "	20	20		
	" " 10.			" "	20	28		
	" " 16.			" "	21	24		
	" " 21.			" "	21	24		
	" " 29.			Insp. and exp. wavy	—	12		
	" July 22.			" "	2	18		
18	S. F. S.—June 3.	15	M.	" "	16	18	Had all the evidences of incipient phthisis, hereditary. Prolonged expectoration, dulness at apex of right lung, etc.	Recovery.
	" " 23			" "	21	22		
	" Dec.			" "	22	21		
21	E. R.—June.	21	F.	Wavy exp.	12	21	Chronic tuberculosis.	Death.
23	L. K.—June.	31	M.	" "	4	16	Fibrinous phthisis, freq. bronchorrhagia	Remains about the same.
24	E. F. M.—June.	31	M.	Exp. and Insp. even.	16	23	Supposed bronchial catarrh.	Recovery.
	" July.			" "	16	32	Tuberculosis.	Death.
30	P. C. S.—July.	42	F.	Wavy.	0	12	Acute bronchitis.	Recovery.
31	E. C.—July.	30	M.	Exp. wavy.	6	18	Incipient phthisis, right apex.	Steady improvement.
40	A. S.—July.	18	F.	Regular and even.	12	12		
	" Oct.			Exp. wavy.	10	12		
	" " "			Exp. weak.	10	12		
	" Nov.			" "	12	12		
	" Dec.			Exp. better.	12	14		
	" Feb.			" "	14	16		
42	E. F.—Sept.	31	M.	Exp. and Insp. weak.	8	10	Fibrous phthisis	Remains same
	" Oct.			" "	14	16	Phthisis with hæmoptysis.	Steadily becoming worse.
44	E. S.—Sept.	36	M.	Even but short.	16	16		
	" Oct.			" "	18	20		
	" Nov.			" "	12	12	Bronchial catarrh, but symptoms of progressive phthisis.	Recovery.
50	L. R.—Oct.	30	F.	Exp. wavy, Insp. wavy and weak.	12	12	Chronic bronchitis.	Improved.
52	S.—Oct. 17.	41	F.	Exp. wavy.	10	10	Phthisis, chronic.	Unknown.
	" " 23.			Insp. even.	10	14	" "	Death.
61	R. B.—Oct. 19.	38	M.	Exp. wavy.	0	18	Suffocative bronchitis.	Recovery.
63	E. T.—Oct.	42	M.	Exp. and Insp. wavy.	0	18	Subacute bronchitis.	"
	" Feb.			Insp. wavy.	0	6	Chronic bronchitis.	"
66	E. L.—Sept.	22	M.	Clear and even.	32	30	Apex dulness.	
	" Dec.			" "	36	32	Occasional cough.	Appears well.
70	F. D.—Oct.	23	M.	" "	16	18	Bronchitis.	Recovery.
71	E. C. R.—Oct.	23	M.	Wavy.	16	23	Chronic phthisis.	No improvement.
73	E. C.—Nov.	22	F.	Ex. weak and wavy, Insp. weak not wavy.	6	6	" "	Disease quiescent
	" Feb.			" "	16	16	Apex dulness, pain, and hæmoptysis. Ev. phthisis.	Gone South.
80	M. G. B.—Oct.	35	F.	Even and clear.	12	12	Subac. bronchitis	Recovery.
	" Nov.			" "	14	16	Supposed phthisis, with aphonia, dulness, and prolonged exp. transmitted voice, softening, etc.	Steady gain in flesh, strength, and voice.
81	K. C.—Nov.	32	F.	Short and wavy Insp.	0	8	Phthisis advanced.	Decline.
82	N. W.—Nov.	36	F.	" "	0	4	Latent apex disease.	Apparently recovered at examination.
88	W. P.—Nov.	31	M.	Long and even.	17	22		
89	E. DeW.—Dec.	16	M.	" "	0	6		
90	W. W.—Nov. 21	20	M.	Exp. wavy, Insp. less so.	22	26		
	" " 25			" "	22	24		
	" Dec. 22.			Long and steady.	23	21		
	" " 6			" "	23	27		
	" Jan. 5.			" "	23	25		
	" " 9.			" "	22	28		
	" " 30.			" "	20	26		
	" Feb. 9.			" "	26	28		
91	W. J.—Nov. '76.	31	F.	Weak and short.	0	2		
92	L. K.—Dec.	24	F.	Even.	10	12		
93	T. H.—Dec. 3	26	M.	Exp. slightly wavy.	20	24	Suffocative bronchitis	Recovery.
	" " 7.			" "	20	28	Subac. bronchitis, with old but quiescent apex disease.	"
94	J. S. C.—Dec. 19.	23	M.	Even.	16	20	Advancing phthisis.	Decline.
95	M. H.—Dec.	50	F.	Short and weak.	0	10	Phthisis unsuspected, no disease.	
96	E. B.—Dec.	42	F.	Even and full.	7	8		

No.	Name and Date.	Age.	Sex.	Character of Respiration.	Power of		Disease.	Result.
					Insp.	Exp.		
97	P. S.—Dec.	54	M.	Even and full.	20	28	Chronic laryngitis.	Recovery.
98	J. J. J.—Dec.	15	M.	Very wavy.	12	20	Acute tuberculosis.	No certain evidence of phthisis.
99	Ch. A.—Jan.	28	M.	Slightly wavy.	14	20	Suspected phthisis.	
100	J. C. A.—Jan.	26	M.	Exp. slightly wavy. Insp. not so.	16	12	Bronchial catarrh.	Still under observation, Feb. 14.
101	F. T.—Feb.	28	F.	Exp. and insp. wavy.	14	16	First stage of phthisis.	
102	E. F. T.—Feb.	36	F.	Even.	10	10	Pulmonary congestion from mitral disease.	
103	J. H. L.—Feb.	35	F.	"	8	4	Emphysema, chronic.	
104	— Feb.	30	F.	"	8	8	Suspected acute millary tuberculosis of two weeks' standing, with pleuritic and peritoneal deposit only.	None.
105	D. S.	38	M.	"	24	28	None.	
106	T. Y.	40	M.	"	22	24	"	
107	W. C.	40	M.	"	12	19	Feeble constitution.	
108	R. L. N.	42	M.	Exp. and insp. wavy.	16	16	Secondary syphilis.	None.
109	W. C.	41	M.	Clear and even.	24	30	None.	
110	C. B.	35	M.	"	30	32	"	
111	F. S.	34	F.	Short and weak.	4	10	Contracted and feeble chest.	
112	E. M.	36	M.	Even.	20	26	Dyspepsia, chronic.	Eucaline.
113	H. S. B.	25	F.	Even and full.	14	12	Eucaline.	
114	E. H.	38	M.	Even.	32	36	None.	

Case 10. In this instance, the young woman had been long engaged at etching of steel implements with acids, and had feared, as had her friends, that she was suffering from consumption. The inspiration and expiration ratio, however, showed no change indicative of serious disease, and after one or two relapses of a bronchitis decidedly asthmatic in character, she recovered.

Cases 13, 21, 23, 24, 30, 64, 65, 81, 82, 89, 91, and 95 exhibit clearly the deficient inspiratory power, although a wavy and jerky character to the inspired current was found in some, of the expired current in others, and of both inspired and expired in others. In No. 89, the deficiency, while marked and connected with weakness of respiratory power, was not accompanied by any waviness, and proved to be a bronchial difficulty, which ended in complete recovery.

Case 14, while one of undoubted phthisis, showed no inspiratory deficiency until just before passing from under observation, and the records consequently in this instance were valueless as assistants in early diagnosis.

Case 18, although followed by recovery, seemed clearly one of hereditary phthisis.

Case 24, although believed to be bronchial catarrh, yet gives the ratio for a more serious disease; and while the gentleman appears well, the result may yet prove that chronic phthisis is simply quiescent.

Case 40, one of undoubted phthisis in a young lady, in whom repeated examinations have verified the diagnosis, yet who steadily gains ground under treatment, seems to contradict the idea that inspiratory insufficiency is a quality of the malady. The gain in respiratory power, as evinced by the record, is satisfactory.

Case 42 also fails to meet the expected requirements of the disease, but the diagnosis has been corroborated by other examiners, and there is but little doubt of its correctness.

Case 44 also fails to confirm our expectations, for decline is evident,

although bronchorrhagia and a strumous diathesis may allow a fair doubt as to the correctness of diagnosis, the patient being a sallow exsanguined man, confined to a close, hot room as a compositor.

Case 30 strikingly disputed a diagnosis that would otherwise have been favourable; a supposed acute bronchitis proving to have been diffused miliary tubercenolosis.

Case 90 is a singularly clear evidence of the failure to detect by the inspiration rate alone the nature of the disease. The progress of consolidation and degeneration was too clear for doubt, yet the rate up to the point of greatest improvement remained at a normal standard, but it may be added that this was clearly phthisis and not tuberculosis.

Case 98, for acute tubercenolosis, shows a better-maintained ratio than is usual, but may be explained by the fact that the deposit seemed localized and not fully developed; a later record would have shown a 0 of inspiration.

Case 104 was one in which the instrument led to suspicion of error of diagnosis (Still under observation.)

Cases 105 to 114, inclusive, are appended merely to show the general run of observations in adult cases, where pulmonary disease was not in question; No. 111 being, however, one in which dulness on percussion and apex engorgement have more than once occurred.

In analyzing these cases, we are not struck by any self-evident confirmation of the views of Waldenberg and his followers, although the examinations have been made and recorded with great care; yet with certain provisions and allowances, they do confirm these views to a satisfactory degree.

To say that *in advanced pulmonary phthisis and tuberculosis, and in the acute and rapid form of either disease, the inspiration rate is diminished*, would be justified by the cases given; and to say that *usually or frequently in health the expiratory power is greater than the inspiratory*; and that in bronchial catarrh and emphysema the expiratory rate is *usually diminished, or diminished in chronic cases*, would seem more nearly correct. These, indeed, seem to be the views of the founder of the science of pneumatometry, as expressed in his later writings. Waviness of the current seems to be the more significant feature of some of the above cases, and, inasmuch as this has not heretofore been dwelt upon in similar investigations, they may repay review. As might be anticipated, serious organic mischief would be thus indicated; and while it is possible that mere weakness of the thoracic muscles might give rise to it, I have not yet observed it in such cases. It is either weak or wavy in *all* cases where inflammatory action is accompanied by soreness in either the chest-wall or the lung; and whether exhibited in either inspiration or expiration, is a significant symptom, and may be said, I think, never to persist or be more than occasional, in those who are destined to perfect recovery.

A final and important observation has grown out of the large number of examinations I have made, and of which the above cases are but a

part, and that is, that the frequent use of this instrument, and probably of any pneumatometer or spirometer, or any other of the devices which forcibly dilate the lungs, can hardly fail to remove the nidus of disease, which exists in an astonishing number of cases supposed to be sound, as a passive engorgement of the apices.

I have found this condition, unaccompanied by other evidences of trouble, to exist for months before the supposed cold adds the spark to the tinder; and have on record many cases in which this engorgement has disappeared without other treatment, and in which the vital chest capacity has been increased fully one-third.

We have, I believe, in these cases, the curable stage of pulmonary disease, and curable by a very simple process.

ART. IX.—*Perinephritis in Children. Three Cases.* By V. P. GIBNEY, A.M., M.D., Assistant Surgeon to the Hospital for the Ruptured and Crippled, New York.

IN *The American Journal of Obstetrics and Diseases of Women and Children* for April, 1876, I published a paper on Perinephritic Abscess in Children, and reported nine cases. Since the publication of that paper, I have had the opportunity of observing three well-marked cases of perinephritis, all presenting in the month of August, 1876, and no one of the three resulting in suppuration. My former cases were closely studied, and to the experience gained thereby, I feel no hesitancy in attributing my success in making an early diagnosis in the cases whose histories I now record.

CASE I. Timothy C., a fairly nourished boy, aged 9 years, was brought to the out-door department of the Hospital for the Ruptured and Crippled, Aug. 14, 1876. He stood leaning far to the right side; spinal column held preternaturally stiff, and deviating a little to the left in the lumbar region, while the right hand rested on the right thigh, which was semi-flexed and rotated outward; the heel resting on the dorsum of the left foot. He walked with great stiffness, favouring the right side; the muscles of the back being tense, and the lumbar spine presenting decided fulness. He could stand on the right lower extremity and flex the left, or stand on the left and flex the right to an angle of 90° , and even beyond that point, without any discomfort. Some difficulty was experienced, however, when adduction was attempted. The act of stooping was likewise difficult. There was no atrophy of the thigh, no shortening of the limb, no fulness around trochanter, no tenderness at the joint on motion, no tenderness on pressure about the trochanter or over the spinal column, no tenderness elicited on percussing the spinous processes or on concussing the vertebræ.

There was tenderness on pressure in the right renal region, though

no tumefaction or swelling. The tongue was coated, and the urine gave an acid reaction, a specific gravity of 1027½, an amber colour, and no albumen.

On the morning of the 5th inst. he was well and free from any deformity; in the afternoon of the same day he fell between two stones, bruising the right side; came in limping, and suffered much that night, while he was quite feverish and unable to walk the next morning. The symptoms were the same during the twenty-four hours following. On the 8th he was able to walk a short distance, and since that date had been improving so far as locomotion was concerned. The mother reported that his bowels were constipated, every second day having a movement.

The family history gave no evidence of struma, either hereditary or acquired, in fact a healthier family one could hardly find.

My diagnosis was perinephritis, although some of the signs pointed to spinal varies; and the rotation of the thigh outward pointed to the second stage of hip-joint disease. My main reliance, however, was on the history. The mother was advised to place the boy in the hospital, and on the following day he was admitted. A more thorough examination was made, and, in addition to the notes already recorded, it was noted that he sat very uncomfortably, the spinal column being curved antero-posteriorly throughout its whole extent, though no angular curve could at any point be detected. A spot above the crest of the right ilium, two inches from the spinous processes, was found very tender to the least pressure; yet no tumefaction could be felt, and there was no difference in the temperature of the two sides, as tested by the surface thermometer. In the dorsal decubitus the thigh could be extended to an angle of 165° without tilting the pelvis; and complete flexion with abduction could be easily accomplished. A trifling enlargement of the inguinal ganglia existed, but no tenderness on pressure thereover. A small sebaceous cyst on the end of the prepuce, which latter was long but easily retracted beyond the corona glandis.

A cathartic was ordered, and an evaporating lotion applied to the lumbar region.

August 21. Since the 17th inst., the axillary temperature has been taken morning and evening, and has ranged between 100½° and 103¼°. He seems to be steadily improving, in that the tenderness is less marked and that he walks with more ease. The flexion of the thigh is unrelieved, however, and in the hope of expediting matters a blister is applied this P. M., over the right ilio-costal space.

22d, A. M. T. 103°; P. M., T. 102°. The appetite is failing and a mixture of chlorate of potassa and the tincture of chloride of iron is ordered. Poultices to the blistered surface.

24th. Poultries discontinued and simple dressing substituted.

28th. *Observation.*—Temperature in axilla normal; no difference in measurements of thighs upper fourth; no difference from coccyx to anterior superior spine either side; in dorsal decubitus thigh can be extended to an angle of 160°, while flexion, ab- and adduction can still be easily accomplished. Surface temperature above the crest of the ilium three inches to the right of the spinous processes 1° higher than at the corresponding point on the other side. Tongue still coated. Walks with more ease, though still leaning to the right side.

31st. Blistered surface has healed and now cold-water dressings are applied.

September 2, P. M. While playing with a chair to-day, is reported to have fallen, and is now unable to stand or walk; complains of pain in right side posteriorly, and there is marked tenderness on pressure. T. 102° , and tongue heavily coated. Cathartics ordered.

3d. Axillary temperature this A. M. $100\frac{3}{4}^{\circ}$; surface temperature at same points as at former observation shows an elevation of 3° right side and a depression of 1° left side. Measurements of thighs, upper fourth, from coccyx to anterior superior spine both sides, and from the navel to spinous processes both sides, respectively identical. While standing by the aid of a chair, the right hip is apparently advanced, the thigh is flexed at an angle of 110° , and the spinous processes of the lumbar vertebræ are suspiciously prominent. An effort is made to stand without support, and then his attitude is difficult to describe; the body is thrown far to the right, the left thigh is flexed on pelvis at a right angle while the leg is flexed on thigh at about the same angle; the right lower extremity is flexed in nearly the same manner, though abducted and resting on the toes and ball of the foot. In the dorsal decubitus the angle of greatest extension is 130° . Excessive pain seems present on the least attempt at movement of any kind. A blister is ordered.

4th, A. M. P. 118; T. 100° . Complains of much pain; lies in bed on left side with right thigh flexed at an acute angle. Poultices applied.

6th. Pain is subsiding. Examined this afternoon by Dr. E. G. Janeway, who thought a little fulness could be detected in the iliac fossa, due probably to swelling of the iliacus internus. The doctor did not make a diagnosis.

17th. Since last note the patient has been steadily improving; has been sitting up in a rolling chair, though is still unable to walk. The tonic has been discontinued, the blistered surface has healed, and a firm roller has been applied. The vital signs are about normal.

October 4. Able to walk again, and carries himself very nearly erect.

11th. An attempt to forcibly extend thigh is attended with signal failure; great pain is caused, and the lameness is increased. As a support and a placebo a spinal brace is applied, especially since the lumbar spine continues quite prominent.

28th. No pain or tenderness; the fulness over lumbar spine much less than at last note.

November 1. Spinal deformity still diminishing, and boy stands perfectly erect.

11th. Spinal brace removed. No deformity of spine can be detected, and there is no contraction of hip or thigh muscles. Patient considered cured.

17th. Two days ago reported himself kicked by one of his fellows while at play, and complained of pain in the right thigh as the result. Ordered to bed, and cold-water dressings were applied. To-day he is up and around.

December 8. A careful examination fails to detect any disease or deformity. Discharged cured.

1877, January 11. Called at the office to-day and still continues well. The mother reports that by exposure two weeks since he contracted a heavy cold and exhibited a little stiffness of the spine, especially after being long seated. This all subsided as the cold was relieved.

This case I have reported at some length because of the relapse so easily induced, and because of the one sign not hitherto observed, viz.,

the rotation outward of the thigh. I shall take occasion at the close of the report of the cases that follow to analyze some of the more prominent symptoms.

CASE II. On the 25th of August, 1876, Robert McC., æt. 4 years, was brought to the out-door department, presenting, on examination, the following condition: A swelling $2\frac{1}{2} \times 2$ inches over the lower half of the left scapula, semi-elastic, the integumental covering hot and a little discolored; the axillary temperature same side 102° against a temperature of 101° of the right side; the motions of the joint free when the scapula was held against the thorax, though when not so held it followed the arm when extended; a tilting of the pelvis to the left side as the child screamingly clung to its mother, with flexion of thigh and leg, the weight being thrown principally on the toes of the right foot, a flattening of natis and prominence of trochanter; in dorsal decubitus the thigh could be almost completely extended; tongue heavily coated; negatively, no evidence of spinal lesion, no fulness or satisfactory tenderness in either ilio-costal space, no rotation of the thigh, no effusion or tenderness around the trochanter, no atrophy of thigh, no emaciation; per contra, boy healthy looking and well nourished; bowels regular. The history as obtained from an intelligent mother was, that, on the 15th inst. he was well in every respect, that, on the 17th, while playing in a common dirt cart, he fell and received a blow from the shaft; that he came in crying and holding the arm to the side; that a physician was consulted forthwith and a sprain of the shoulder-joint diagnosticated; that he was feverish on the same night and subsequent nights; that on the 20th inst., three days later, he began to flex the thigh and walk lame, which condition continued to the date of our first observation.

The father is either rheumatic or syphilitic, more likely the latter. The mother is in excellent health, while her mother and sisters have always been dyspeptic, but otherwise healthy. Eight children have been born, and there have been no miscarriages or stillbirths. Several children have died but not of strumous diseases, and there has been no strumous manifestation in the family. Robert had severe intestinal disorder during his second summer, and rubeola lightly in the third summer. No sequelæ were observed.

The examination was not conducted with the desirable thoroughness, so utterly beyond control had the little fellow become by his recent suffering and present fright.

My diagnosis at the time, however, was a probable dislocation of the tendon of the latissimus dorsi with resulting suppurative inflammation, so far as the scapular lesion was concerned, while I diagnosticated a perinephritis to account for the contraction of the psoas. A cathartic was prescribed and an evaporating lotion was ordered for the swelling.

August 28. Tumour over scapula the same as at last visit. Thigh flexed as usual. No difference in size of thighs as measured over upper fourth. No difference from coccyx to either anterior superior spinous process. He is reported to have been feverish every night, though there has been no loss of appetite.

September 11. The mother reports that on the 2d inst. she took the boy to the Demilt Dispensary, when the attending surgeon opened the tumour, giving exit to a large quantity of bloody pus, and that much relief has followed. There is no discharge now and no tumour. Motion

at shoulder is perfectly free and painless, scapula remaining in normal position. The child is very cross and greatly emaciated; will not stand alone, but lies on the right side with left thigh flexed on pelvis at an angle of 90° , and will not permit the least attempt at extension. Since the last visit the knee has been the seat of occasional pain. There can not as yet be detected any fulness about the trochanter or above the ilium, any resistance to complete flexion of the thigh, or any rigidity of the spinal column. The diagnosis is still perinephritis, and a fly-blister is ordered to the left ilio-costal space, while cod-liver oil is ordered internally.

21st. Thigh still acutely flexed and the child very cross and irritable. A mere shade of fulness is detected above the ilium. The appetite is very capricious. A second fly-blister is ordered.

October 3. Appetite greatly improved; child not so cross; fulness has disappeared; surface temperature in ilio-costal spaces identical. The flexion, however, is the same as at last visit, and the occasional pains in the knee have continued. Warm-water douche ordered to be used for five or ten minutes each day, the stream to be directed against the left lumbar region.

10th. Improved in every particular; stands nearly erect, and walks short distances; is free from pain, and his appetite is excellent. Continue the douche.

18th. Stands erect and walks without any lameness, though the mother reports that she can occasionally detect a little stiffness. There is a perceptible gain of flesh, and the general health is all that could be desired.

November 1. About cured, except that some lordosis is noticed when he walks, though this only present when he walks for exhibition. All treatment suspended.

22d. Discharged cured.

1877, January 19. Was examined carefully to-day, and no sign of disease can be detected.

CASE III. Charley M., æt. 3 years, was brought to the out-door department August 29th in the following condition:—

To all appearance well nourished; tongue, however, very foul; temperature elevated, and pulse 128; unable to walk without very decided lameness, the left thigh being flexed at an angle of about 135° , while the limb is with difficulty able to bear the weight of the body; thigh easily and painlessly flexed and rotated, but when the mother attempts to put the stocking on or handles the limb with the least roughness the little fellow cries lustily; absence of swelling or effusion or extra heat around the trochanter.

On the 25th inst. the child was perfectly well; a little lameness was observed on the morning of the 26th; about 7 P. M. same day he fell, the abdomen coming in contact with the floor; he jumped up immediately and ran off to play. About 10 P. M. he was taken with vomiting, crying, and high fever. On the 27th, the day following, he was feverish and unusually peevish, muttering and raving that night in his sleep. On the 28th he was a little better and walked around "drawing the left thigh up," however.

The antecedent history of the boy was found to be excellent, as also both paternal and maternal family histories. He has a brother four years his senior at present in the hospital for necrosis of the tibia, but this was preceded by malnutrition and general debility induced by diphtheritic paralysis.

The diagnosis lay between morbus coxarius and perinephritis, though the latter was regarded as the more probable in view of the history and freedom of flexion and rotation. Accordingly a cathartic was ordered and the mother was directed to apply flaxseed poultices to the left costal-iliac space and to renew them every six hours.

August 31. Limb straight when standing, but when sitting on a hard surface, the floor for instance, the popliteal space cannot be brought nearer than two or three inches to the floor. He winces on deep pressure above the crest of the left ilium. Limb still tender when the foot is handled. Tongue still coated, and boy feverish, though the cathartic acted well. His appetite is poor. The same treatment to be continued.

September 6. Improving; walks with very little lameness; stoops with great facility; when sitting the popliteal space can be brought to within an inch of the floor; when standing the limbs are straight; tongue clean, no fever and restlessness at night. On the 2d inst. I directed the mother to discontinue the poultices and substitute cotton-wool with a firm roller applied thereover. The same is continued.

9th. Continues to improve; can sit now and extend limb so that popliteal space touches the floor.

October 4. Nothing can be detected save a slight lameness on rapid walking. Rests well and eats well. A little resistance to complete flexion of thigh on abdomen is discovered, and a spica bandage is applied as a precaution against excessive exercise.

12th. No difference can be detected in size or appearance of nates or thighs. No pain or lameness unless he runs; no resistance to complete flexion. The spica discontinued.

24th. Considerable lordosis and prominence of the abdomen, but no spinal stiffness or tenderness. As a tonic for the stomach the liquor potassæ arsenitis in two-drop doses three times a day is ordered.

November 11. Called to-day, and no limp on walking or running can be discovered. No evidence of pain obtained either from examination or mother's report. No tenderness on rough handling, no change in the natis, no deviation of the limbs from the normal condition, and no resistance to complete motion in the natural directions. The mother has noticed nothing abnormal for two or three weeks. Discharged cured.

1877, January 16. I saw the mother this day, and she reports that not an untoward symptom has been observed since my last examination.

In the case last reported I have to observe that, at the time I discovered the inability to extend the leg when the boy assumed the sitting posture, a possible neurosis affecting the hamstring tendons suggested itself. This I eliminated by examining the spine for tenderness, the muscles for any tenderness, pain, or swelling, and by remembering the anatomical fact that flexors of the thigh, under certain circumstances, were extensors of the leg, and that any lesion affecting the flexors at their origin could be manifested by failure of those same muscles to perform their extensional function. I regarded, then, the difficulty in bringing the popliteal space to the floor as due to fault in the extensors rather than in the flexors of the leg.

I have frequently met with that contraction of the biceps femoris due to functional disturbance of the spinal cord or meninges, a phenomenon

with which neurologists are very familiar. In reviewing the case, then, I feel very sure that the affection was undoubtedly a comparatively mild perinephritis.

I have recounted the histories at perhaps an unpardonable length, but my reason for so doing is to draw attention to the diagnosis of morbus coxarius and caries of the spine in their early stages. I am firmly convinced that one or the other of these two diseases is frequently diagnosed and treatment instituted which is soon followed by a perfect recovery, and true cases are seen presenting the same trains of symptoms apparently, the same treatment is instituted and recovery does not speedily follow, in fact, the diseases go through all their terrible stages. The result is that the general practitioner dislikes to treat any of those grave arthropathies.

It will be seen that the case first recorded presented some of the signs that are regarded by many as pathognomonic of spinal caries, and yet no caries was developed. Some very reliable signs of hip-joint disease were also present, and yet subsequent developments fairly excluded any disease of the hip-joint. The outward rotation was calculated to mislead one, yet when the joint surroundings were carefully examined one could easily exclude any lesion therein.

Case II. was complicated by the scapular abscess and the suspicion of an arthropathy at the shoulder. The mother represented herself as being almost penniless, and hence my therapeutics had to be chosen with a rigid economy. I prescribed the cod-liver oil, because she chanced to be in the possession of a bottle. The external applications were evaporating lotions at first, but these soon became too expensive; finally, as a *dernier ressort* I prescribed the inexpensive warm-water douche. This acted to a wish, and I take this opportunity of adding willing testimony to the effectiveness of this simple agent. A point of interest to diagnosticians is the pain which was referred to the knee. Those occasional pains, taken in connection with any lameness and muscular rigidity about the ilio-femoral articulation is, as is well known, regarded as strong evidence of hip-joint disease. It not unfrequently happens that when we are sitting in judgment on a case, and the parent is recounting the symptoms, the testimony as it were, we pass judgment, as the "pain in the knee" is brought forward. That we fancy explains the whole matter, and our decision is given. This case should teach caution.

An interesting feature in connection with Case III. is the fact that the pulling on of the stocking induced pain in the neighbourhood of the hip-joint. That is a symptom too on which much reliance is placed in the diagnosis of morbus coxarius. I felt strongly inclined to change my diagnosis when thinking of that fact, which I myself observed. By giving all the testimony its due weight I reached the conclusion already recorded. The resistance to complete flexion developed later in the progress of the

disease was of suspicious import, and I watched with some anxiety for the next visit. On this case I have commented at sufficient length, and shall now close my paper by referring to two cases that have been reported since the publication of my first paper on this subject.

Dr. F. D. Lente communicated a case to the *Medical Record*,¹ which is remarkable as being the youngest of which there is any account. The child was five weeks of age, and had been suffering from an obstinate diarrhœa. An irregular fever and great pain were noted symptoms. Dr. Marion Sims had seen the case with Dr. Lente, and while the affection was attracting interest by its obscurity, the nurse called attention to the sudden appearance of a swelling in left lumbar region; Dr. Lente states that he readily diagnosticated nephritic abscess, though I presume he meant perinephritic, as he reported it as such. Aspiration was attempted but failed, and the incision was resorted to with success. The discharge ceased in about two weeks, and the duration of the disease altogether was about two months. In the doctor's communication he states that a report of my paper represented me as saying that the diagnosis was impossible. My language was: "To diagnosticate an early perinephritis in a young child, I believe, is impossible." Of course, when the tumour presents, the diagnosis is easily made. My recent experience though enables me to modify my statement in the former paper. I believe that a diagnosis can be made before a tumour presents, *i. e.*, if the child be old enough to walk. I have had no cases younger than one and a half years.

Dr. Traill Green in the *Philadelphia Medical Times*² reports the case of a girl, æt. 13 years, wherein the disease was unattended by any disturbance of the general system. I think, however, a careful perusal of his report will satisfy one that there was some disturbance of the general system. He speaks of great pain, with thigh flexed and inability to move without help. The abscess too must have given rise to some elevation of temperature at least. The case is altogether an instructive one, and Dr. Green has very properly put it on record.

I have been unable to find any more reported cases in the journal literature. The number then, including the three in this paper, is seventeen; the two reported by Bowditch,³ one by Löb,⁴ one by Lente, one by Green and twelve by myself.

135 EAST 42D STREET.

¹ April 22, p. 205.

² November 11, 1876, p. 52.

³ Boston City Hospital Reports, 1870.

⁴ Jahrb. f. Kinderheilkunde Neue Folge, viii., s. 197.

ART. X.—*A Contribution to the Etiology of Optic Nerve Atrophy.* By CHARLES S. BULL, M.D., Surgeon to the New York Eye Infirmary; Ophthalmic Surgeon to Charity Hospital, New York.

As preliminary to the observations detailed in this short paper, it should be stated that the form of atrophy of the optic nerve under consideration, is that usually designated as simple, white atrophy, independent of any intraocular or visible signs of preceding inflammatory action. This primary atrophy, though by no means of rare occurrence, yet is not met with so often that it fails to excite any interest. The atrophic process is a fact easily recognized, and there is no difficulty in reaching the diagnosis in question from a survey of the history of the case. We also fully understand the nature of the pathological process as far as the optic nerve itself is concerned; but when we come to look into the causation of the trouble, we are still at sea, not only in regard to the origin, but even more so, in respect of its localization. In searching for the cause of the optic nerve atrophy, it becomes necessary to review carefully all points connected with the past environment of the patient, and to examine rigidly and minutely into all matters regarding the constitutional ailments, in the hope of finding, somewhere, an origin for the trouble. Authorities are generally agreed, that the difference which exists between the inflammatory atrophy and primary atrophy, is rather one of degree than of kind. The characteristic sign of atrophy, a more or less white optic papilla, sometimes appears so rapidly after the development of the original disease, or after some injury, that there is scarcely time for any interstitial contraction or shrinkage to take place. The paleness of primary atrophy is almost always spread over the whole disk equally, and not confined to any one sector, and may exist for some time before any marked diminution is noted in the calibre of the retinal vessels. Of course it is a very difficult matter to decide between what is mere paleness of the disk, from lack of blood supply, and actual atrophy of the nerve fibres; for one and the same cause may lead primarily under similar conditions, sometimes to simple discoloration, sometimes to progressive atrophy, and sometimes to inflammation; and these different conditions, active and passive, may imperceptibly run into one another. We know that primary atrophy of the optic nerve is very often limited to the anterior part of this nerve, and rarely extends beyond the chiasm; and this knowledge is based upon frequent autopsies. But in some cases, the process involves the corpora striata; and when the trouble was at first monocular, it has been known to extend to the optic nerve of the opposite side. But one important fact in the pathology of this form of atrophy is, I think, too often neglected, or perhaps forgotten, viz., that this atrophic process may be traced as far back as the corpora quadri-

gemina, and from thence along the connecting fibres to the posterior columns of the spinal cord. The process may begin anywhere in the course of the nerve, without any apparent cause, certainly without any inflammatory origin, and may exist for a long time without showing any ophthalmoscopic evidence of it; and many of the cases of amblyopia and amaurosis, without any morbid sign discoverable by the ophthalmoscope, must be classed as retro-ocular atrophy of the optic nerve, probably within the cranium, possibly as far back as the nuclei of origin. In searching for a cause of primary atrophy, Stellwag would have us believe in an hereditary predisposition to the disease, to which, however, I am not inclined to give much credence; for if it be so, it seems to me not a question of primary disease of the nerve, but rather of some intracranial or spinal affection, which involves the optic nerve secondarily, either directly by continuity of tissue, or indirectly by pressure.

Again, medical literature furnishes us the records of many cases illustrating the connection which exists between atrophy of the optic nerve and the anæmic state, particularly when induced by loss of blood. Here the affection is generally bilateral, with occasionally a transient improvement in the vision; but still the process usually seems to be progressive. Very often the failure of vision in these cases of anæmia does not occur for some time after the loss of blood has ceased; and occasionally this is so marked a fact, that we are not justified in attributing the amblyopia solely to the hemorrhage. In despair at accounting for the blindness in any other way, we relegate these cases to that "ultima thule" of causes, some disturbance of the vaso-motor system of nerves, and are brought face to face with one of the most difficult problems in all pathology.

Of late years frequent attention has been called to the effect produced on the optic nerve by certain morbid or deleterious substances contained in the blood, and carried about in the circulation. Among these may be mentioned lead, alcoholic extracts, and the poison of tobacco.

We are tolerably well convinced also that there is a relation of cause and effect between the atrophy of the optic nerve on the one hand, and certain febrile diseases, exanthemata, and even the milder forms of intermittent and remittent fevers on the other. Here we meet with a rapidly developed amaurosis, usually of both eyes, sometimes accompanied by mydriasis, sometimes not; and when we look into the eye we see one of two things, either a perfectly normal fundus, or a white, atrophic optic disk. Here we must confess that the exciting cause is obscure, and especially is this so, when the atrophy occurs in the course of, or after, a long-continued, obstinate case of intermittent fever.

Among the protean manifestations of malarial poisoning, neuroses of various kinds and degrees are perhaps the most common, and it is not strange that an organ like the eye, which with its appendages is so liberally supplied with nerves, should by no means uncommonly be affected by

the constitutional disease. When a person's system becomes saturated with the miasmatic poison, a very common and obstinate symptom is neuralgia of the ophthalmic and superior maxillary division of the fifth nerve, accompanied by more or less conjunctival injection, and sometimes by aetnal conjunctivitis. Another ocular manifestation of this toxic influence much less often met with is a more or less complete paresis of the accommodation with mydriasis. Still rarer is that form of amblyopia, which is not dependent upon paralysis of the ciliary muscle, but upon aetnal degeneration of the optic nerve, and possibly of its centres of origin; and it is this form of eye trouble to which I wish to call attention, and which is sufficiently rare to make two new cases prove of importance, as a contribution to the etiology of optic nerve atrophy.

Reasoning by analogy there is no objection to believing that the constitutional disease may be considered as the cause of the local affection, which may possibly result from the influence of the changed character of the blood on the central organs. The affection of the optic nerve here considered is one which ends in pronounced atrophy, and may be developed primarily, the diagnosis here being based upon the absence of any important concomitant symptoms. Moreover the destruction of nerve elements in the optic disk and nerve is not always in proportion to the changes seen with the ophthalmoscope. This form of optic nerve atrophy is not always connected with a generally anæmic state of the patient, as one might assume in cases long subject to malarial influences, and hence saturated with the poison, for, in one of my cases, the patient's appearance and complexion were wonderfully healthy.

The not uncommon intermittent disturbances of vision, which accompany malarial fever, and which become more marked during the height of the fever, are probably due to paralysis of accommodation. Certainly I think they should be carefully distinguished from the progressive amaurosis dependent upon optic nerve atrophy. This is probably of the same nature as the amaurosis met with in severe febrile diseases, particularly the eruptive fevers. In the two cases of my own it was binocular, tolerably symmetrical, but accompanied by only very moderate mydriasis, with movable pupils.

Again the dimness of vision resulting from conjunctivitis should be distinctly recognized as such. These cases of conjunctivitis occur quite commonly in what are called "masked" attacks of intermittent fever, and are probably simple periodic attacks of congestion, or vasomotor neuroses of the eye with tendency to appear unilaterally, and accompanied by considerable photophobia.

How the paludal poison eventually affects the optic nerves or their centres of origin, is as yet a matter of speculation. Of course, the immediate cause is some change in the course of the nerves or tract. No autopsies have yet been made to aid in substantiating the theory, how-

ever. As two facts in the chain of reasoning, we must of necessity accept, first, the physiological law that nerves regulate the metamorphosis of tissues; and, second, by the direct nutritive influence of the blood upon the nerves as well as on the tissues. If a morbid agent is introduced into the blood, and continues there, the blood naturally becomes altered, the alteration varying with the amount of saturation of the blood, and the length of time the poison is present in the circulation. I believe it is not yet satisfactorily settled what the nature of the changed blood exactly is. When, however, this change has reached a certain degree, the nervous system begins to show phenomena, generally subjective, which prove that changes in composition have occurred. This seems to be especially the case with nutrient nerves, and possibly may explain the failure in nutrition of the optic nerves, and their consequent atrophy.

Yet optic nerve degeneration is a very rare complication of malarial poisoning, so rare indeed, that in the two cases to be detailed, the diagnosis was reached only by exclusion. Moreover, we do not meet with it in the severe forms of miasmatic fever, which occur in the south and west of our own country. In the types of fever occurring in these regions, the paludal poison has a very extensive range, hardly any organ or tissue in the body being exempted from its destructive ravages. It unquestionably far exceeds in intensity the poison of similar origin, occurring in the Eastern and Middle States. It is true that optic nerve atrophy must be a very late symptom, and indicates complete saturation of the system by the poison, and that therefore in cases where the saturation is most marked, the disease is of severe form, and runs a rapid course, and hence there would probably be no time for the degeneration of the optic nerves to take place. To this objection it may be answered, that in the congestive types of malarial poisoning, the attack is usually ushered in by a dimness of vision which rapidly goes on to complete obscuration, followed by unconsciousness, the amblyopia here being probably the result of increased intracranial pressure from increased supply of blood. Now, if one such attack may bring on a disturbance of the optic nerve action, which at first is purely functional, may not a repeated number of such attacks produce a permanent organic change in the fibres of the optic nerve or tract, or in the nuclei of origin, by long-continued and repeated pressure? Certainly, the supposition is not unreasonable.

Whether the atrophy in these cases is of really central origin, that is, starts from mal-nutrition, and consequent death of the nuclei of origin of the optic nerves, or whether it occurs in the course of the nerves or tracts, it is impossible to say. The former, however, is the more plausible view. It is probable that when the progressive amblyopia makes its appearance, there is at first no change from the normal to be seen by the ophthalmos-

scope, and that the discoloration and atrophy of the optic papillæ is the final stage in the process. Both of my cases had suffered from failing vision for some months before they came under my observation, and hence the early appearances of the disks were of course unknown. Mannhardt reports in the *Monatsblätter für Augenheilkunde*, 1865, four cases of affections of the eye of malarial origin, but in none of them was the optic nerve involved. The cases are briefly as follows:—

1. Man, æt. 36, presented himself with acute catarrhal conjunctivitis, which had suddenly come on at 9 A. M. This disappeared as suddenly at 2 P. M. of same day. The third day it appeared at same time and disappeared same day at about same hour as before. On fifth day it returned as before, and the nature of the trouble being suspected, small doses of quinia were given. On seventh day only a slight and short attack appeared, and the dose of quinia being increased, it never returned.

2. Man, æt. 30, complained of indistinct vision coming on every day or every second day in the mornings, and lasting one or two hours. Had suffered from obstinate intermittent fever four years before, and these attacks of transient amblyopia had then appeared, followed by violent supraorbital neuralgia, ending in vomiting. For a year had had no vomiting and only slight neuralgia, but amblyopia remained. Examination showed it to be due to paresis of accommodation. Regular and large doses of quinia soon brought about a cure.

3. Young girl, æt. 18, had suffered for some time from quotidian fever, and during the attacks vision was impaired. Examination showed paresis of accommodation, increased during the attacks. Regular administration of quinia cured the fever and the paresis of accommodation.

4. Child, æt. 8, with hypermetropic strabismus convergens, had suffered from tertian fever, which of late had been accompanied by failing vision. Here examination showed paresis of accommodation, with increase of squint during the attacks. After treatment by quinia the paresis of accommodation disappeared and convex glasses corrected the squint, which only reappeared when the glasses were removed.

In those cases where the effect of the malarial poisoning is a paralysis of the accommodation, the paralytic condition of the ciliary muscles seems to continue, at least in part, during the intervals of the attacks, and a recurrence of the attack increases the paresis.

The following two cases fell under my own observation, though not until the signs of active malarial poisoning had subsided:—

CASE I. Israel S., æt. 42, German, butcher. Patient is a large, well-developed muscular man, with sallow, almost jaundiced complexion, light-brown hair and beard, blue eyes, and general anæmic condition of buccal and conjunctival mucous membranes. States that he was perfectly well up to five years ago. At that time contracted while in a malarial region an attack of tertian fever of very severe type, each chill being very violent and lasting several hours, and occasionally preceded by loss of consciousness. The fever always remained of tertian type, and was broken up after two weeks by quinia, but returned three months later, and this time lasted six weeks. From that time up to date of admission he stated that he had never been free from it, and that sometimes it was as violent as at first, and the attacks of unconsciousness now follow the chill, and sometimes last for several hours. Fever is not regularly tertian, but patient seems to be saturated with the poison, and is unable to throw it off. For more than a year there has been a continual tinnitus in both ears, which at times is so loud as to interfere decidedly with the hearing.

power. About four months ago he noticed a failure of vision, which seemed to affect both eyes simultaneously and to an equal degree, and this has steadily increased, unaccompanied by any pain or other abnormal symptom. His head symptoms are simply the tinnitus and the unconsciousness of the febrile attack, and these are by no means common. The patient denied ever having had any venereal disease, and no trace could be found upon his body or in his throat of any syphilitic taint. He had never smoked in his life, and had drunk no beer or liquors for nine years.

Pupils were moderately and symmetrically dilated, but reacted very sluggishly. R. E. $V = \frac{2}{3}$, L. E. $V = \frac{2}{3}$ and no improvement by any glass. Refraction emmetropic, media clear, and a dense white optic papilla in each eye, with its outline distinct, no sign of any preceding neuritis. Very little change in calibre of retinal vessels, but nutrient vessels of the disk evidently entirely obliterated. The chest was examined and found normal, both as to lungs and heart. The urine was carefully examined on several occasions, and found perfectly normal. In fact the man had no demonstrable disease but his malarial poisoning. He was put upon the rational employment of quinia in such cases, and at the same time strychnia was injected hypodermically daily, the dose being rapidly carried up to gr. $\frac{1}{2}$. In the course of a week there was some improvement in sharpness of vision, but this proved only transient, and the vision slowly failed in spite of all treatment. By the careful and continued use of quinia and arsenic, the malarial attacks became much less frequent and severe, so that after about three months' treatment, they ceased to occur; but as the patient then disappeared, it is impossible to say whether they again returned on the cessation of treatment. There was the usual concentric limitation of the visual field, and the variety of colour blindness met with in primary atrophy was well marked.

At first sight it would seem as if the amblyopia and tinnitus might be attributed to the use of quinia. But on questioning the patient on this point, he stated positively that he had taken no quinia for nearly three years, as he had lost faith in its efficacy, and that for more than two years he had taken no medicine of any kind. Yet the amblyopia only made its appearance five months before I saw him.

This case would seem to favour the theory that simple atrophy of the optic nerve is more dangerous to vision than consecutive atrophy, for the vessels often begin to dwindle, a little from the first, and that when this atrophy cannot be traced to any particular local cause, but appears to be a disease *per se*, the prognosis is very unfavourable.

CASE II. John D., æt. 38, American, farmer, a well-developed, ruddy man. This patient was not very intelligent, had had no education, and an examination into his past history was somewhat difficult and unsatisfactory. He denied all venereal disease, and a careful search of his person failed to find any trace of syphilis. He had never been rheumatic nor suffered from pains of any kind, until three years ago, when he was seized with a sudden and violent chill, while occupied in ditching and draining a marsh in the centre of this State. The chill was followed by fever, and this by profuse and long-continued sweating; and since then he has never

regained his health. Though the attacks of fever could be broken by large doses of quinia, yet they would return on the cessation of the treatment, which was never properly carried out. The fever was at first a tertian, but occasionally would manifest a tendency to become quotidian, and was not always preceded by a distinct chill, nor even by chilly feelings. There was never any loss of consciousness, but he suffered frequently from vertigo and the headache was frontal and very severe. About six months before admission, or two and a half years after the first attack, the vision began to fail in both eyes and has steadily grown worse, but is now more marked in R. E. One month before admission he suffered from a localized pneumonia in R. lung, which terminated in abscess, and from which he has not yet entirely recovered.

Nothing abnormal about exterior appearance of eyes, except moderately dilated and very sluggish pupils. R. E. V=fingers at 10 feet. L. E. V=fingers 20 feet. Marked concentric limitation of field, particularly in the L. E. Colour blindness for all colours at centre, and only recognizes blue outside of colour-scotoma. Both optic papillæ are very white, but R. more so than L.; here retinal arteries are markedly diminished in calibre. Media perfectly clear, no signs of any neuritis or intra-ocular inflammation, and no deposit of pigment anywhere in fundus.

This patient had had no decided chill for more than a month, but he was placed upon the steady use of quinia, and at same time strychnia was injected hypodermically daily. But all was of no avail. Vision steadily grew worse, and though patient was under constant treatment for five weeks, there was never the slightest improvement in the vision, though his general health was very much improved.

This patient had never had any tinnitus nor had he noticed any impairment of hearing, though quinia had been administered in large doses. For a person who had been so long subject to malarial poisoning, he presented an unusually healthy appearance, and here again the cessation was sought in the constitutional disease, by exclusion.

These two cases are the only ones which have come under my notice, where I thought a direct connection between paludal poisoning and degeneration of the optic nerve could be traced, and of course are only of value for the purpose of inciting us to renewed careful observation of obscure cases of nerve atrophy. I do not think we are assuming too much in discerning a direct connection of cause and effect in these two cases, for not a few instances of the enduring pernicious effect of malarial poisoning upon the nerve structures occur in medical literature, and one such case, I may be permitted to cite. M. Bide, in the *France Médicale*, No. 92, 1875, relates a case of pernicious intermittent fever in a man, æt. 25, with coma and severe inflammation of the thoracic viscera, in the course of which there appeared a numbness in the fourth and fifth fingers of the left hand, and painful sensations in the course of the left ulnar nerve, and later atrophy of the interosseous spaces of the left hand, and diminution in size of entire left arm. Bide regards these disturbances as the results of chronic poisoning by marsh miasm.

It may seem strange that there are no records of cases illustrating the

poisonous effects of miasm upon other nerves of special sense, particularly the auditory nerve. It is certainly within the bounds of possibility that some of the cases of deafness reported as due to large and repeated doses of quinia may be owing, at least in part, to the malarial poisoning, for the cure of which the drug was administered. In the reports of cases of permanent deafness in the French soldiers serving for years in Algiers, and invalided because of this infirmity, the cause is attributed to the use of quinia, and as deafness is a well-known result of the long-continued administration of this drug, the reasoning is probably correct. It would be interesting to know whether any observations have been made upon the state of vision in these soldiers, exposed for a number of years to repeated attacks of intermittent and remittent fevers. The results of large doses of quinia, it is true, seem to stamp its action as a poison in some cases, and certainly the salts of quinia, as Ringer states, are protoplasmic poisons. They pass readily into the blood, and probably but a small quantity is decomposed in the body. Authentic cases exist, in which the deafness resulting from the administration of large doses, has become absolute and permanent, and the temporary loss of vision is occasionally limited to one eye, and where this is so, the pupil is dilated, the lesion being probably paresis of the ciliary muscle and sphincter of the iris.

A. von Graefe has reported, in the *Arch. für Ophth.* iii. 2, two cases of sudden amaurosis which he attributed to the use of large doses of quinia.

The first patient was a man, who, in the course of several weeks, had taken about six drachms of the drug, sometimes as much as half a drachm in the day. Deafness became marked from the beginning of the treatment, as also tinnitus, and lasted for some time after the drug had been discontinued. After fourteen days of treatment, vision began to fail, and he found that he was almost blind in the R. E. In the course of the next month, vision of L. E. began to improve rapidly, but R. E. gained very slowly. When Graefe saw him, four months after the trouble began, nothing abnormal could be seen in visual field or fundus, but central vision in R. E. remained very much disturbed.

The second patient was also a man who had suffered for a year from tertian or quartan intermittent, and who had taken in all about an ounce of quinia. Vision in R. E. began to fail at a time when the dose was increased one-half, and was accompanied by tinnitus but no deafness. Vision failed so rapidly in R. E. that in a few days it became entirely blind. When Graefe saw him, three months later, there was nothing abnormal to be seen in the eye. Vision in L. E. perfectly normal. As there was no perception of light in R. E., the case was regarded as hopeless. Assuming that the cause was some disturbance in the intracranial circulation, Graefe ordered use of artificial leech, taking four ounces of blood from temple. Two days later patient could perceive movements of hand in a narrow segment of the field. Two days later four ounces of blood again taken, with result that patient with same quadrant could count fingers about two feet. Some further improvement occurred, and one week later four ounces were again taken, followed by marked improvement, so that the fingers were counted the length of the room in the same though wider quadrant. Improvement followed each application of the Heurteloup, and at end of fourth month patient could read small type.

Graefe recognized the possibility of the amblyopia in both these cases being attributed to the intermittent fever, but thought that the history of the first case was against this view. Though the R. E. might possibly be affected during a febrile paroxysm and remain amblyopie, yet the L. E. was first affected fourteen days after the fever had disappeared. Moreover, the simultaneous occurrence of deafness, here of central origin, justified his assumption that the large doses of quinia were the cause.

47 EAST 23D ST., Jan. 6, 1877.

ART. XI.—*Obstinate Blepharospasm cured by Inhalation of Nitrite of Amyl.* By GEORGE C. HARLAN, M.D., Surgeon to Wills [Ophthalmic] Hospital, Philadelphia.

ALTHOUGH the following case is reported chiefly with the view of suggesting a further trial of nitrite of amyl in similar affections, it will be seen to present several other points of considerable interest, and is therefore given in full.

M. T., a strumous girl of 15 years, applied to the Wills Hospital, in April, 1875. She said that her sight had always been weak, but that she had been able to read large print until a year before. Since then her vision had been failing, and she had suffered more or less pain in the eyes, principally in the right. In the right eye there was only quantitative vision. In the left $V = \frac{20}{128}$, with a very strong concave glass ($-\frac{1}{24}$). When the pupils were dilated by atropia, it was seen that there was congenital dislocation of both lenses. The right lens passed through the pupil into the anterior chamber and back again, moving freely with the movements of the head. The left lens had considerable freedom of motion in the vitreous humour, but remained behind the iris. Its centre was below the axis of vision, and only its upper-half could be seen through the dilated pupil when the head was erect and the eye directed forward. A convex lens of five inches focus ($+\frac{1}{6}$) gave the same degree of vision through the upper part of the dilated pupil, above the lens, as $-\frac{1}{24}$ had given through the narrow pupil and the lens behind it. This shows a refractive power in the lens of $\frac{1}{18}$, or more than twice that of the normal lens held in position by the suspensory ligament; and is interesting in connection with the Helmholtz theory of accommodation, which is based on the fact that the elastic tension of the suspensory ligament, by opposing that of the capsule, diminishes the curve of the lens, while, when the ligament is relaxed by means of the ciliary muscle, the unopposed action of the capsule increases the curve, enabling the eye to focus divergent rays of light from near objects. Supposing that this lens, if restrained by a suspensory ligament, would have the average refraction of $\frac{1}{4}$, we have a little more than $\frac{1}{4}$ for the increased action of the liberated capsule, which about corresponds to the accommodative power of a normal eye, at the patient's age. Both lenses were perfectly transparent.

The right pupil never contracted properly after the use of atropia, and the lens could be prevented from passing into the anterior chamber only by retaining it in position, by placing the patient on her back, while the pupil was caused to contract in front of it by the use of Calabar. This was done several times, but each time the lens was found in front of the iris again in a day or two. The irritation and pain, for which the patient had sought relief, was, of course, only increased by this state of things, and it was decided to extract the lens, which was done on the 24th of May. The operation presented unusual difficulties, on account of the fluid condition of the vitreous, as well as the mobility of the lens, and its transparency which made it impossible to see it without oblique illumination. The windows of the operating-room were darkened, and a cone of light thrown into the pupil from a gas-burner, by means of a large convex lens. An upper section of the cornea was then made with a Graefe cataract-knife, the lens, in its capsule, quickly withdrawn with Levis' wire loop, and the lids instantly closed. This was accomplished without loss of vitreous, and the patient made a rapid and good recovery. There was an adhesion of the iris to the corneal wound, but no protrusion, and a wide and clear pupil remained. At the time of her discharge, on the 14th of June, she had a vision of $\frac{20}{80}$ in this eye.

On the 30th of June, she was again admitted to the hospital, complaining of violent pain in the left eye. There was a well-marked ciliary zone, and a considerable diminution of vision. The left lens was extracted in the same way, and with an equally satisfactory result, except that there was a more extensive involvement of the iris in the corneal wound; and the patient returned to her home in the country, quite well.

On the 22d of September, she made her third appearance, with pain in both eyes, intense photophobia, and the most violent blepharospasm, which resulted in narrowing of the commissures and complete inversion of all the cilia of both eyelids. After a treatment which lasted several months, and included a double canthoplasty and an entropion operation on all four lids, she was once more discharged with fair vision, but not quite independent of smoked coquilles.

In September, 1876, she was admitted a fourth time, with photophobia and blepharospasm more intense than before. She could not open her eyes at all, except partially in a darkened room, and it was impossible to see the cornea without etherization. An ophthalmoscopic examination was made, under ether, and the eyes found to be quite healthy. No impression was made on the spasm by pressure on the supraorbital or infraorbital nerves, and in the entire absence of any local cause, the disease was pronounced "hysterical." Every form of treatment that could be thought of by myself or my colleagues was faithfully tried, including fair and repeated trials of galvanism, both constant and Faradaic, but in vain. In addition to the spasm, she complained of violent pain, particularly in the right eye, which she finally begged me to extirpate. At the end of four months, the case seemed as hopeless as ever, when, at the suggestion of Dr. G. W. Ziegler, the house-surgeon, inhalation of nitrite of amyl was tried; and on the fourth day, to the great surprise of every one, the patient walked into the prescribing-room, with eyes wide open and perfectly well.

The following are Dr. Ziegler's notes of the administration: "The total quantity of amyl used was one ounce, given on the different days,

respectively, as follows: *1st day.* \mathfrak{z} ss in the morning, \mathfrak{z} ss at noon, and \mathfrak{z} j at night. *2d day.* \mathfrak{z} j three times. *3d day.* \mathfrak{z} j twice. *4th day.* \mathfrak{z} ss once; and *5th day,* \mathfrak{z} ss once. By the end of the third inhalation, the patient could partially open the lids. When \mathfrak{z} ss had been taken, she was fully under the effects of the drug; and on the fourth day of administration she walked into the clinic-room alone, with eyes open. She was very difficult to amylize, and would have borne twice the quantity given had it been necessary to accomplish the result. The increase in the pulse ranged from twenty-four to thirty-six beats per minute. There was a perceptible increase in temperature."

At the end of nearly a month, the patient remains quite well, and has borne repeated ophthalmoscopic examinations without flinching.

With the careful testing of the refraction that was now possible, a high degree of astigmatism was discovered in the right eye, and a less degree in the left. There is also considerable corneal opacity, from old keratitis, in both eyes; but with proper correction (O. D. + 3.5 sph. \odot + 6 cyl. ax. 90° , and O. S. + 3.25 sph. \odot + 24 cyl. ax. 30°) vision is $\frac{20}{60}$, and with + 2 glasses she can read the finest print of Snellen's test types.

Though nitrite of amyl has been extensively used in angina pectoris during the last ten years, and its use has been more recently recommended by Dr. S. Weir Mitchell (*Phila. Med. Times*, April, 1872, and *Transactions College of Physicians of Philadelphia*, 1875), and others, in spasmodic and hysterical affections, I believe this is the first published case in which it has been resorted to in this particular form of spasm. Of course, one case is not conclusive in establishing the value of a therapeutic agent, but the effect in this one was so striking as to seem almost like magic, and, at least, affords encouragement for further trial.

ART. XII.—*Woorara in Rabies; Report of two Cases of, with Remarks.* By B. A. WATSON, M.D., Surgeon to Jersey City Charity and St. Francis Hospitals, Jersey City, N. J.

CASE I. *Rabies Felina.*—Mrs. E., æt. 36, married, had been in feeble health several years, suffering from tuberculosis; was bitten in the index finger, in the month of August last, by a pet cat. The cat was not rabid, and has not given any indication of rabies to this date (Feb. 8, 1877).

The bite drew blood, but the finger was bound up and nothing more thought of it. The animal still remained about the house, but no one else was bitten.

Whether the animal had been teased or provoked in any way, previous to this occurrence, is not known.

The patient does not recall any unusual sensations until Oct. 17, when travelling in the cars, en route for Baltimore, she found herself suffering from intense thirst, which at the time she could not satisfy,

although she drank three large goblets of water in immediate succession. The sight of the water now for the first time, and the fact that it did not quench her thirst, produced strange nervous sensations which were more or less constant until her death.

She now began complaining, but attributed it to cold, fatigue, and her feeble condition. The following day she arrived at the Centennial Exhibition, but was too ill to go about the grounds much, being compelled to remain seated the greater portion of the time.

While returning from Philadelphia, Oct. 19, she suffered much from chilliness, and also noticed a difficulty in swallowing water.

From this date until I was called to see her, Oct. 25, she complained constantly of dyspnoea, vague pains, chilliness, and weakness, but supposed her indisposition due mainly to her old tuberculous trouble, associated with a recent cold and some rheumatic pains.

On the day of my first visit she awoke about 5 P.M. feeling thirsty. She attempted to take a drink, but found it impossible, not even being able to take it from a teaspoon.

She was now so nervous that she could not remain in the room alone, and finally went to the kitchen where I found her seated about 8 P.M., surrounded by her servants.

The pulse slightly increased in frequency; respirations rather hurried and superficial; pupils dilated; conjunctivæ slightly injected; expression of face, anxious; constant dyspnoea, and the surface of the body bathed in perspiration.

The mentioning of the word "water" instantaneously produced a severe spasm of the laryngeal and other respiratory muscles, and, although she made a determined effort to take a few drops from a teaspoon, the attempt was attended with *horrible suffering*, but not a drop was swallowed.

Neither ærophobia nor other indications of hyperæsthesia, at this time, were observed. The husband was now questioned in regard to his wife's having been bitten by any animal capable of transmitting rabies, but at this time seemed very positive that no such accident had occurred.

I assured him that his wife was now suffering from that disease. I sincerely regret that I was not prepared to commence the treatment with woorara immediately, which might possibly have changed the result.

Patient was ordered $\frac{1}{2}$ grain morphinæ sulph., and 5 grs. assafoetidæ every two hours.

Oct. 26. Medicine taken as ordered until 5 A.M., but without any apparent effect.

She was now steadily becoming worse, and was even so bad that she could not swallow a pill. Had spent a miserable night, getting no rest for body or mind, tossing about constantly, and at no time free from the spasms.

9 A.M. I saw the case with my friend Dr. T. R. Varick. The case was regarded as typical, and too well-marked to permit any doubt in regard to the accuracy of the diagnosis.

Being unable to remain with the patient during the entire day, I now called to my assistance Dr. John Van Vorst, Jr., who remained with the patient until her death. The following part of the report is furnished entirely by him:—

10 A. M. The patient was found sitting propped up in bed, and was not disturbed at the entrance of her husband and the writer. Pupils widely dilated; not intolerant of light; constant but difficult expectoration of tenacious mucus. There were constantly convulsive movements about the larynx.

It seemed impossible for her to remain quiet for any length of time; first sitting up, then leaning back or turning sideways. Pulse 118; respirations 25; temperature not taken, and evidently above normal, but not much.

10.10 A. M. Gave of a solution of woorara¹ (old) gr. $\frac{1}{8}$ hypodermically. In baring the arm for the injection, no convulsive movements occurred, nor when the needle was introduced and withdrawn. (When patient was examined by Drs. Watson and Varick, the draught ceased by opening the door brought on convulsive movements of the arm and face. The doctors could not touch her without producing the same effects, nor could she make the attempt to swallow water without having violently tonic spasms of the laryngeal muscles.)

When asked where the pain was, she said in her throat, putting her hand over the laryngeal region. She put in her mouth a large cough lozenge (Brunnmei's), sucked it and swallowed the saliva. She told the servant, who had been sitting directly opposite to her, to leave the room, and even gave the same command to her husband.

She told me, of her own accord, about the cat biting her, and wondered whether that could make her go mad, and she thought it was very like it, as she could not drink water (this last word caused her a violent spasm of the laryngeal muscles).

11.40 A. M. She felt no better, and gr. $\frac{1}{4}$ of the drug was given. Pulse 116; respiration 22.

11.50 A. M. She said she felt much easier. This was ten minutes by the watch after the hypodermic was given. She changed her position less frequently; respirations more easily taken; can be touched on the hands and face without producing any unpleasant effects, although when she endeavours to wipe her mouth with a handkerchief she has convulsive movements and does not accomplish her object very well. Complains of draughts from the windows, which are very slight, but they were afterwards prevented.

12.05 P. M. Pulse 104. Husband came into the room, when she immediately stretched out her arms, as if tonically contracted; respirations became rapid and superficial; face anxious; pupils widely dilated; turned her head from him and made every effort to tell him to keep quiet and not touch or speak to her. When he sat down she slowly resumed her former attitude. Still eats her lozenges. Has taken no food of any kind since yesterday afternoon.

12.15 P. M. Dr. Watson saw her and remarked that she did not mind his touching her hands or face, and she assented when he asked her if she did. Since 10 A. M. the convulsive movements about the larynx have not ceased, although they have become less violent and frequent.

1 P. M. Gr. $\frac{1}{16}$ of woorara (new solution) was given hypodermically. Patient asked to be given it, as she had experienced so much relief from the last one. Mouth drier, tongue browner, but due partly to the lozenges. Continues to expectorate with more difficulty. Dr. Watson

¹ A solution prepared last February, which was thought to have lost strength by keeping.

had ordered poultices to the throat and chest, and the servant entered with one, which she did so quietly, that the first that was known of her entrance was that the patient suddenly sprang up on her knees in bed and stretching out her arms and with anxious face pointed to the door. She became quiet when the girl went out. The poultices were of little use, as she would not keep them on.

1.20 P. M. Does not think she felt any effect from the last hypodermie, and there being no evidence that she did, gr. $\frac{1}{10}$ (new solution) was given. Pulse 116; respirations 22.

2.10 P. M. Very little relief apparently.

2.40 P. M. For last half-hour has been very comfortable, not complaining. Husband came into the room and she was disturbed, but soon quieted. At this time she complained. Gr. $\frac{1}{6}$ given.

2.50 P. M. Feels relieved by hypodermie. The expectoration has been relieved about twenty minutes after each hypodermie as regards difficulty, frequency, and profuseness.

3.25 P. M. Gr. $\frac{1}{4}$ given; patient asking for it; Dr. Watson being present.

4.05 P. M. Gr. $\frac{3}{8}$ given. Pulse 100; respiration 22.

4.20 P. M. Feels marked relief.

5 P. M. Gr. $\frac{1}{2}$ given. Pulse 114. Asked for it again. Just as it had been given, Dr. Watson came in, and the draught produced a slight paroxysm. Patient was not so soon quieted by this hypodermie as by the previous one.

5.40 P. M. Dr. Austin Flint, of New York, entered with Drs. Varick and Watson. After much persuasion he got her to drink some water, but she only took a few mouthfuls, bringing on violent tonic contractions of the laryngeal muscles and causing intense agony. When Dr. Flint left she asked for more water, under the impression that if she could drink water she would be able to get well; she took a mouthful, but with the same results as before. She said "I did not think I would be able to say that word" (viz., "water").

Patient became soon very restless, requiring all her husband could do to keep her in bed. Asked for water shortly again, but could not take any.

6.05 P. M. Gr. $\frac{3}{4}$ given. Insists she is barking like a dog, but nothing similar in any respect is heard. She is only coughing, but neither shrilly nor loudly.

6.15 P. M. Complains that she is not seeing right. Slight mental aberration. If these effects are due to the drug they are the first unpleasant symptoms, as not the slightest sign of paralysis in any part of the body can be found. Sensation also is perfect all over. She calls for milk, then water, then brandy and water; wants her husband to give it to her, then the writer, and finally refuses to take it. Pupils widely dilated. Still endeavours to get out of bed.

7.00 P. M. Patient now comparatively quiet; talks rationally. Drank two mouthfuls of water very easily as compared with previously.

7.30 P. M. Convulsive movements recommenced, brought on by attempt to drink water, but cannot take it. Complains of her head not being clear.

7.55 P. M. Convulsive movements have almost ceased. Has begged for the last hour not to be given any more injections.

8.45 P. M. Gr. i. given, Dr. Watson being present. Convulsive movements still continue, but are very slight.

8.55 P. M. Convulsive movements violent, and continued so until 9.15 P. M., when they ceased, patient begging all to save her; pulse still good at the wrist; sank back on pillow, dying. 9.20 P. M. Dead.

For the report of the following case I am indebted to my friend Dr. R. B. Gilman, who saw the case in consultation with Dr. S. V. W. Stout.

CASE II. *Rabies Canina*.—Monday, December 18, 1876, I was called to see a lad of 17, with the following history: Saturday, Dec. 3d, 1876, he was bitten on the index finger by a dog which, there was every reason to believe, was rabid.

Two weeks after receiving the bite, and on the Saturday preceding my visit, he complained of feeling unwell, but continued about his usual work; that night he slept but little; said he could not breathe easy; felt nervous.

Sunday morning the dyspnoea had increased, and slight spasms were excited by draughts of air.

His "vivid hyperæsthesia" distressed him so much that he went to bed. Later in the day he constantly spat saliva, and spasms came at intervals. From 4.00 A. M. until 7.00 A. M. on Monday the spasms were very violent and almost constant. At 9.30 A. M., the time of my visit, he was sitting in bed bathed in perspiration, and making heroic efforts to get rid of the saliva that filled his mouth and clogged his throat. Pulse 140 and feeble. Severe spasms were excited at the sight, mention of, or attempt to drink water, and also by currents of air.

Hydrophobia was diagnosed, and the use of woorara advised.

11.30 A. M. Gr. $\frac{1}{12}$ woorara was given hypodermically.¹

12.00 M. There were no appreciable effects, and $\frac{1}{6}$ gr. hypodermic was given.

12.15 P. M. Pulse 130, fuller and stronger. Expectorations same.

12.30 P. M. Gr. $\frac{1}{6}$ hypodermic was given.

1.00 P. M. Pulse 120, and stronger. Expectorations diminished, and spasms less severe.

1.15 P. M. Gr. $\frac{1}{6}$ hypodermic was given. In a few minutes after the last injection the patient declared that he was greatly relieved. The trouble arising from the saliva had almost wholly disappeared. He drank a hot milk punch with slight difficulty, and said he had no pain. I was obliged to leave him now, and did not again see him. I learned from Dr. Stout that he died at about 4.30 P. M. of the same day without having had any more spasms. He received two more injections ($\frac{1}{6}$ gr. each) of woorara—in all about one grain.

This report is mainly interesting on account of the use of woorara in the treatment of a much-dreaded and terrible disease.

The symptoms and fatal termination of both cases destroy the interest that might otherwise attach to the diagnosis. For the purpose of facilitating a more ready and complete comprehension of the first case I have arranged the following schedule, by which will be seen at a glance the most important changes in the case. This schedule contains only the

¹ One gr. woorara dissolved in three drachms of water, of which fifteen minims supposed to represent $\frac{1}{12}$ gr. of drug.

facts observed and recorded at the bed-side, and consequently is not so full in detail as might be desired; further, the existing hyperæsthesia and restlessness of the patient made it impossible at first to take the temperatures, and finally, the excitement among the inmates of the hotel interfered more or less with the physician in the discharge of his duty.

No. of Injec.	Time.	Am't of Injec.	Pulse.	Resp.	Condition at time of injection.	Apparent effect of the injection.
1	A. M. 10.10	O. S. gr. $\frac{1}{2}$	118	25	Spasms severe; great restlessness; expectoration tedious and very difficult.	At 11.40 A. M. Slight improvement in pulse and respiration; otherwise no change.
2	11.40	gr. $\frac{1}{2}$	116	22	No material change in condition, except slight improvement in pulse and respirations.	Ten minutes after injection, patient was better; spasms less frequent; expectoration less troublesome; less restlessness.
3	P. M. 1.00	N. S. gr. $\frac{1}{10}$	..	..	Expectoration more difficult; otherwise no change.	None.
4	1.20	gr. $\frac{1}{10}$	116	22	Same as at last injection.	Up to 2 o'clock, spasms less frequent and expectoration easier.
5	2.40	gr. $\frac{1}{6}$	..	..	Complains again; spasms severe; greater restlessness.	Ten minutes after this injection, there was marked improvement.
6	3.25	gr. $\frac{1}{2}$	..	..	Good.	None.
7	4.05	gr. $\frac{1}{2}$	100	22	Same as at last injection.	In 15 minutes, patient perceptibly benefited; expectoration and spasms markedly relieved.
8	5.00	gr. $\frac{1}{2}$	114	..	Spasms slightly increased; more restlessness.	Less marked than at previous hypodermic.
9	6.05	gr. $\frac{1}{2}$	..	..	Water given with highly injurious effects, producing very marked restlessness and convulsive movements.	None.
10	8.45	gr. 1	..	..	Disturbance of vision; mental aberration of short duration. General and very violent convulsive movements.	None.

An examination of the preceding schedule in connection with the report of the case treated by Drs. Gilman and Stout, and also the case recently reported by Dr. Ira B. Read, of New York, in this Journal, vol. 73, p. 136, shows the effects of the drug to have been very similar in the three cases, and the fact that these observations and records were made by different men adds materially to the interest that must attach to the use of woorara in the treatment of rabies.

Dr. Read says in his report:—

"In this case some temporary benefit seemed to be derived from the action of the morphia in producing a quiet state. But this seemed to have no control over the aversion to food or liquids; and it was only when the patient seemed to be under the influence of the woorara that she could swallow without much difficulty."

Dr. Gilman reports that, after there had been administered to his patient $\frac{7}{12}$ gr. woorara which had been given in divided doses within one hour and forty-five minutes: "In a few minutes after the last injection the patient declared that he was greatly relieved," and we now find him able to drink "a hot milk punch."

Dr. Van Vorst, who had administered to Mrs. E., within an hour and thirty minutes, $\frac{3}{8}$ gr. woorara in two doses, remarks: "Ten minutes after the last injection, patient was better; spasms less frequent; expectoration less troublesome and less nervousness."

In both cases reported here a careful examination of the details cannot, I think, fail to satisfy the reader that a very decided effect was produced by the administration of the drug; and, further, that the improvement was very marked and general.

The question may possibly be asked why did not these cases, and also Dr. Read's, recover? I shall not attempt to answer it, but desire merely to say that in each of the three cases the condition was highly unfavourable to recovery. Dr. Read's case after a formative stage of about one week became fully developed on Saturday, but did not receive the first injection of woorara until 11.00 A. M. on the following Tuesday, the fourth day of the disease, and the fourth day of continued fasting.

Dr. Gilman's patient was without any beneficial medical aid nearly two days after the disease became pronounced, and the history is silent in regard to a formative stage, although it is probable that it had an existence of longer or shorter duration.

In the case of Mrs. E. there is a clear history of a formative stage lasting about one week before the disease was fully developed; and, after the complete development a lapse of about eighteen hours took place before she received the woorara.

This patient failed to call for medical aid, until the disease had thus progressed, under the impression that her sufferings were due to some slight complication to her old tuberculous affection, which had already greatly impaired her strength and rendered her an easy victim to any acute disease. She was greatly relieved temporarily by the use of the woorara; the relief was not at any time complete, but was very marked and extended to all the symptoms.

The spasms from which I found her suffering when I first saw her in the morning; the difficulty attending expectoration; the ærophobia, etc., were not at any time during the day *absolutely controlled*, but were in *every* instance *greatly improved* within a few minutes after the injection of woorara provided the quantity equalled or exceeded one-fourth of a grain. The only exception to this statement occurred in the evening after the patient had been persuaded to take water, which she did with very great effort, and this was followed by a reappearance of all her symptoms in a highly aggravated degree. Woorara now lost its power to give even relief. This case has taught me a lesson that I shall never forget, and I desire to impress it on the professional mind; *never offer, to a patient suffering with hydrophobia, water or anything else that disturbs him mentally or physically, unless it is in your opinion absolutely necessary for his recovery or a correct diagnosis.* It is absolutely necessary for

the benefit of your patient that *every source* of excitement should be removed. Further I am convinced that treatment during the formative stage is *highly desirable* and the use of woorara should be commenced as soon as possible after the disease has become fully developed.

During the formative stage I should use the same treatment as given in the case reported in the *Amer. Journal of Medical Sciences*, vol. 72, p. 80. I think the report of these cases throws some additional light on the doses that may be necessary.

This medicine should be pushed as rapidly as consistent with the safety of the patient, to the point of controlling every symptom in the case, not merely to the point of relaxing their severity. The fatal character of the disease when left to nature, I think fully justifies this action.

Another fact was observed in the first case, although not previously recorded, *i. e.*, that the effects of the drug began to diminish in about two hours.

If some physician, after suitable experiments with this powerful drug, would publish the results showing the toxicological effects, symptoms, mode of death, etc., he would thereby enable the profession to use it more intelligently, and possibly with better results.

ART. XIII.—*Beach Haven, New Jersey. A Remedy for Hay Fever or Autumnal Catarrh.* By SAMUEL ASHHURST, M.D., Surgeon to the Episcopal Hospital, Philadelphia.

Of late years much attention has been given to the so-called hay-fever and its variously entitled congeners, with the relief from suffering which its victims can best obtain by a residence during the time of the attack at some specific locality. The White Mountains of New Hampshire, Fire Island, New York, and other locations have had their claims presented to the profession, and at each of them, during the proper season, will be found many or few sufferers from this complaint. As it is pretty evident that immunity from the influences provocative of the disorder is not confined to one or two places, it becomes important that the merits of all such regions should be known in order that a choice may be made among them, which will be determined by the accessibility or the attractions each one may present to the individual taste.

At the risk of incurring the charge of egotism, it will be perhaps best to give a personal narrative, which may enable the reader to form his own judgment in the case. Having suffered from autumnal catarrh accompanied by intense asthmatic symptoms from very early life, I endured the suffering attendant upon the malady as best I could; either at home, in

Philadelphia, or in central New Jersey, until the fall of 1860. Being then induced to try the effect of the climate of Newport, I found that the severity of the symptoms was moderated at that place. Reflecting upon the peculiar position of Newport, a town situated on a narrow tongue of land, surrounded by the sea on all sides but one, I came to the conclusion that an island residence would be beneficial, and that the benefit would probably be proportioned to the absence of upland vegetation. Upon making inquiry for such a location easily reached from Philadelphia, I found that the island of Long Beach most nearly answered the requirements of the case, and accordingly went there for the first time in August, 1861. The relief experienced at that place was so great that with one exception each recurring season has found me a resident of that narrow strip of sand. The exception referred to was in the year 1867, when I ventured to spend the fall in the interior of New Jersey, in the vain hope that the habit of recurrence might have been broken by the lapse of years. The result of this experiment was so unsatisfactory, the catarrh and asthma making their appearance with unusual vigour, that there has been no inclination left to repeat it.

From 1861 gradually increasing numbers of fellow sufferers, led in the first place, I believe, by my example and experience, have been resorting to different parts of Long Beach, and in all uncomplicated cases with greater or less benefit.

A glance at the map of New Jersey will best explain the situation. Extending between the inlets of Little Egg-Harbour and Barnegat, Long Beach is eighteen miles long, with a varying width of from one-half to three-quarters of a mile, and is distant about six miles from the main land. Beach Haven is about six miles from the lower end of Long Beach, at a point where it is narrowest, it being but half a mile from sea to bay, which last is in this position five miles wide. Owing to the width of the bay, even the rare westerly winds, bringing the influences of the land, are tempered and lose most of their malign powers in their passage across this broad sheet of water, and the sea breeze is less frequently replaced by that from the land, so much dreaded at most watering places. With this condition of things, there is necessarily a low thermometer.

The geological formation resembles that of most of the beaches upon the Jersey coast, sand upon a substratum of meadow, while beyond marine grasses and bayberry bushes there is no natural vegetation. As the land is so narrow, a mere ridge of sand and meadows, the constant ebb and flow of the tides, both upon the ocean and bay fronts, secures very perfect drainage, which circumstance, together with the unimpeded action of the sun's rays, produces a dryness of atmosphere which is remarkable for the sea-shore.

It is not claimed that at Beach Haven no one will suffer from any symptoms of hay-fever, but my own experience, together with that of

others, goes to prove that when the wind comes from any other direction than the west, there will be complete immunity enjoyed, and this condition of things exists during at least five-sixths of the time. When, however, a westerly wind does prevail, the complaint may make a partial appearance, and the symptoms will be found to bear a close proportion to the severity of the form to which the sufferer is subject at home. In all cases, without exception, it is reasonable to expect that the severity of the symptoms will be diminished, and this diminution may be fairly computed at from fifty to ninety per centum, which is believed to be quite equal, if not superior, to the results obtained at any other place.

The natural advantages and attractions in the way of bathing, fishing, and sailing, together with the dry and bracing atmosphere, have been bringing Beach Haven into notice of late years among pleasure seekers and invalids of all classes, so that fair hotel accommodations exist.

From Philadelphia Beach Haven is reached by the Pennsylvania Railroad from Market Street wharf in three hours and a half; from New York the time occupied *via* either the Pennsylvania or New Jersey Southern Railroads is about five hours.

The object of this article is not to unduly exalt Beach Haven above other resorts, but it has been written at the urgent request of some of my fellow-sufferers, and in the hope that thereby some others may find this place, as we have done, a haven of rest.

1423 WALNUT STREET, Jan. 31, 1877.

ART. XIV.—*An Epidemic of Typhoid Fever produced by Sewer Poisoning.* By D. B. SIMMONS, M.D., Surgeon to Ken Hospital, Yokohama, Japan.

SINCE the toxic principle which gives rise to typhoid fever is believed to find its way into the economy, in a majority of cases, through the medium of drinking water, no medical man who finds himself dealing with this disease, especially in an epidemic form, can fail to make the most searching investigations into the water supply of the locality, and especially of that used by those attacked. In the subjoined sketch of an epidemic of typhoid fever, which has just come under our notice, no especial sagacity in discovering its source is claimed, nor do we expect to offer anything new regarding the etiology of the disease. Our principal object in offering it to medical readers is, the very definite nature of the facts, which were elicited in proof of the source of the poison, which in so many cases is difficult and even impossible to substantiate.

As consulting surgeon of the native police force, we were called in to

see three cases which had been admitted into the hospital two days before with symptoms of typhoid fever. A careful examination of the cases showed this diagnosis of the attending physician to have been correct. We made some general inquiries as to the possible cause of the disease, and as regards the water supply especially, which was to be reported upon the following day.

On making our second visit we found two more cases had been admitted. As the disease had undoubtedly assumed an epidemic form, we immediately proceeded to personally investigate the matter, when the following facts were elicited:—

The five men already admitted had all come from the same station. This proved to be the central one, where some two hundred of the force were quartered. On an inspection of the quarters we found them very clean, and in an apparently healthy section of the town. The condition of the well, or chief water supply, was now looked into. It was found *not* to derive its supply from the ground, but through an under-ground pipe connecting with the system which furnished the town, and which was supplied from a river some five miles distant. On an examination of the water in this well, nothing very definite was ascertained as to its purity. We suggested to the officer in charge of the station the propriety of closing it, however, for a time, and obtaining their water elsewhere.

On the following day we found four more cases in the hospital from the same station. We at once returned to it, to see if our order had been carried out. As the well derived its water from the town supply, the officer could not be convinced that it was possible for this to be the source of the disease, so nothing had been done. We now reported the matter to the Governor, who immediately called upon the chief of the bureau of sewers and water-works of the town to produce his plans of the same, when the following facts were elicited:—

1st. That the well in question was fed by a terminal pipe.

2d. That this pipe passed directly through the middle (transversely) of a large sewer.

3d. That this pipe was of wood.

4th. That no other well received its supply from this pipe after passing through the sewer.

Taking it for granted that this was the source of the disease, this last fact clearly accounted for the limitation of it to the station, as previous inquiries in the vicinity had failed to discover any cases among those who received their water supply from other wells.

An order was issued to close the well in the station, and open the sewer at the point where the water-pipe crossed it. As was anticipated this was found decayed, and a greater or less exchange of the contents of the two systems going on, and thus was settled beyond a question the

source from which the well was contaminated. If any other proof is required as regards this point, we have it in the complete arrest of the disease when this communication was rendered impossible by passing the pipe over the sewer.

For ten days, however, cases continued to come into the hospital till the number reached twenty-three. Though many were severe, only two terminated fatally; one having suffered from previous lung disease, and the other from Beriberi, in which the heart had been affected. This small mortality we attributed chiefly to the good wine, milk, and beef-tea supplied to those attacked, and to good ventilation, in consequence of the very open nature of the hospital, like all other Japanese buildings.

Some time afterwards we were informed by two European police sergeants, who lived in the same station, that they had discovered that whenever they used the water from the well referred to, they were sure to be attacked by diarrhœa. Even tea made from it they declared produced this same result. This last fact tends to prove that even boiling does not destroy the toxic principle which gives rise to the disease, even if this should be a spore, as is generally believed. The possibilities of error in the statements of the sergeants are too great, however, to give the idea suggested much weight.

As all of the two hundred men posted at this station had this well as their only water supply, we have an opportunity of forming an estimate of the number per one hundred which under the same circumstances are likely to contract typhoid fever. In a large number diarrhœa was the only result, and in all the fully developed cases, we may here observe, diarrhœa was the first symptom.

YOKOHAMA, JAPAN, January 22, 1877.

ART. XV.—*A brief Description of the System of Forced Ventilation which has been lately Introduced into the Pennsylvania Hospital, with some Surgical Statistics and Remarks on Hospital Construction.* By THOMAS G. MORTON, M.D., one of the Attending Surgeons. (With a wood-cut.)

THE subject of ventilation, as applied to hospital buildings, has received so much attention, that a description of the system of forced ventilation, introduced during the past year into the Pennsylvania Hospital, and which, after a careful consideration, appears to be the best for all general hospitals, may appropriately be noticed; while a short account of the modes of heating and ventilation formerly used, with some surgical statis-

ties from the records of the oldest hospital in America, will not be out of place.

When the hospital was first established, in 1751, a private residence was rented and occupied for several years.

On the 28th of May, 1755, the foundation-stone of the present building was laid, and in the following year the eastern wing was completed and opened. The western wing was first used in 1796, and the centre in 1805. In 1851-52, the eastern wing was rebuilt, and at this time many important improvements were made throughout the building generally. The hospital, which is most substantially built of brick, faces the south, is two stories high, with moderately commodious attics, and is placed in the centre of a plot of four acres; the grounds are for sanitary purposes beautifully cultivated, and adorned with flowers, trees, and shrubbery; around the margin of the inclosure, at intervals of forty feet, stand lofty buttonwood trees, which were planted more than one hundred years ago. The centre building is sixty-one feet in front by eighty-four in depth; a balustrade surrounds its cupola, seventy-two feet from the ground. From the centre, east and west, extend wards, each eighty-one feet long, thirty-three wide, and twelve high. At the ends of these wards are wings, each one hundred and seventeen feet long, otherwise corresponding in size with the wards they join. The hospital is intended to accommodate two hundred and twenty-five patients; the largest number at any one time under treatment has been about three hundred, of whom one hundred and twenty-five were insane, but the latter, since 1841, have been exclusively treated in the department for the insane, on the west of the river Schuylkill.

Heating.—Until 1821, the wards were warmed by large open wood-fires, which not only furnished sufficient heat, but also kept the air in fair condition.

During that portion of the year when there were no fires in the wards, the air was supposed to be sufficiently changed, though, of course, this was not really the case, by simply opening windows and doors. In 1823, stoves burning anthracite coal were introduced; but wood-fires in some of the wards were used until 1826. In 1846, the west wing was heated by air passing over steam coils, and this plan proved so satisfactory, that in 1851-52, the same arrangement for heating was introduced throughout the hospital. The original steam coils placed in the hospital in 1841, remain in good order and have required but slight repairs.

Ventilation.—In 1851-52, this subject first claimed some attention, and openings were then made near the ceilings, some of which communicated with ducts leading directly to hot flues; but a number had no such communication and were consequently of little or no use. In 1865, this so-called ceiling ventilation was abandoned, and openings near the floor were made; but the general arrangement of the ducts remained as before, and no

marked improvement followed. It had often occurred to me, that with greater care and cleanliness in dressing cases, erysipelas and pyæmia might be in a great measure prevented; and to remove as much as possible all sources of danger from contaminating influences, I introduced, in 1866, the "Ward Carriage," which was described by myself in the July number of this Journal for 1867, and again by my colleague, Dr. William Hunt, in the Pennsylvania Hospital Reports for 1869, who said:—

"There is no doubt that erysipelas is a rare thing in our wards now; we cannot call to mind a fatal case, or even a severe one, of that trouble for a long time. Pyæmia; too, is not nearly so common; but as we believe the causes of that terrible disease are still in a great measure a mystery, we can but claim our present comparative exemption as an incident. That the "Ward Carriage" has diminished the liability of our patients to it we have no doubt." "We expect to hear of the introduction of this carriage, or something like it, into all large hospitals everywhere; and sure are we, when once used, it will be pronounced a great labour-saving machine; and, as it furnishes all the items of purity and cleanliness, we may also claim it as a contribution to the saving of life."

In a letter to the *British Medical Journal*, Feb. 18, 1868, Mr. Spencer Wells says:—

"I have not seen anything so convenient, and saving so much labour, in any of our own or the Continental hospitals; but I am anxious to direct particular attention to this apparatus for the far more important purpose it serves in getting rid of sponges, basins, and a mode of dressing which must tend to render the air of surgical wards impure, and to convey the organic poison of pyæmia, erysipelas, and other contagious diseases from one patient to another."

But an occasional death from pyæmia demonstrated that the causes of this malady had not entirely been eradicated. In 1874, improvements which involved large expenditures were undertaken; and in the report of the Managers, May, 1875, it is stated that—

"New marble basins, with hot and cold water, have been added; new receivers of iron lined with porcelain, with traps and larger pipes, have been placed in the water-closets, with an increased flow of water for drainage. Bath-rooms have been rearranged, and basins with marble or slate tops placed throughout the wards.

"In the basement, a large coil of pipe heated by steam has been placed at the lowest part of the main ventilating chimney, to insure the more effectual rarefaction of the air, and also to give an increased downward ventilation in the water-closets. All closets, clothes-rooms, chambers, kitchens, wards, and halls, after being carefully cleansed, have received several coats of paint; and all bath-rooms arranged with larger drainage and increased supply of water, and the floors laid of slate."

Ward ceilings were also replastered, and in many instances the floors were relaid and painted. This thorough renovation proved in all respects satisfactory, for since that time not a case of pyæmia has occurred in the hospital; erysipelas has rarely been seen, while those cases which have occurred have been of a mild type, and readily yielded to treatment. These results are found, it will be observed, in a hospital where compound fractures of all kinds are constantly under treatment, together with wounds of every sort, and amputations numbering from thirty to forty or more a

year; where, also, other operations of varying magnitude are constantly performed.

Of old hospitals it has often been observed that they cannot by any means be kept healthy; and that, on this account, they should give place to cheaply built pavilions, which, from their light construction and inexpensive character, may, so soon as they become injurious, be replaced at a comparatively trifling cost; and again, in regard to their ventilation, that the more nearly they approach the open character of field hospitals the less liability will there be to hospital gangrene, pyæmia, and erysipelas. Pavilion wards or hospitals may apparently meet all the requirements for the proper treatment of surgical cases; but it is doubtful if any better or as good results can be adduced from their statistics than are to be found in good permanent buildings. And it may properly be urged against the temporary pavilions as against tent hospitals: First, that their light construction and nearness to the ground predispose to dampness, especially as they are generally built without cellars. Second, that, the wards all being on the ground floor, the patients are more exposed to malarial disease, certainly in many cases a question of importance; and third, and chiefly, they are not apt to have a proper ventilation. If asked "why not?" I answer that it would be almost impossible to apply fan ventilation, without great expense, to these lightly built and generally scattered edifices; while the low buildings make the less perfect system of ventilation by hot shafts, to say the least, difficult to manage; and finally, if cheaply built they are very objectionable during the heats of summer. Nor are these objections purely theoretical, for I am personally acquainted with the bad results following all these defects in pavilion buildings. It cannot be denied that if wards of this kind were built high from the ground, with thick walls, forced ventilation by a fan, and well-cemented cellars, they would be excellent structures. But where then would be the boasted cheapness, and how could an additional story do any harm? You would in fact have a permanent hospital. If then we can show a hospital over a century and a quarter old, where deaths from so-called "hospitalism" are, to say the least, very rare, is it not patent that these are the structures to be desired? and it may here be remarked that all pavilion hospitals become in reality permanent structures, for who ever heard of such buildings being torn down, save after a war, when they were of no further use?

Practically, and as a rule, no efficient system of ventilation is employed in any temporary pavilion structure, and so this vital consideration must be left to attendants, with whom it might at times rightly become a question, whether to poison a whole ward on the one hand, or, on the other, kill a single patient with draughts of cold air, as from tetanus and other causes. Indeed, I have more than once known of surgical patients dying from draughts alone.

Nor are tents always desirable even in the matter of ventilation. One of the most terrible outbreaks of hospital gangrene I have ever witnessed occurred at the Mower United States Army Hospital at Chestnut Hill, where the wounded men had been treated exclusively in tents from the date of their injuries. At the Satterlee Hospital, also, gangrene and pyæmia were exceedingly common among patients similarly located. At the Pennsylvania Hospital I have never known of a case of hospital gangrene, and pyæmia, which has now for more than two years been banished, was even before this period only occasionally observed. It is quite true that some permanent hospitals are so poorly built and badly ventilated, that no amount of repair or attention will make them safe; but this is no argument against the erection of the proper kind of permanent buildings. The Pennsylvania Hospital has always been comparatively healthy, and although now over one hundred and twenty-five years old, the statistics of the last few years compare favourably with those of the past.

From 1842 to 1876, 37,272 surgical cases were treated; of this number, 2459 died, showing a mortality of a little over six and one-half per cent. If, however, we take from this number 627 deaths which occurred from compression and concussion of the brain and spinal cord, rupture of the abdominal viscera, and railroad injuries, etc., deaths which immediately followed the accident as a result of shock, we have the mortality during the past thirty-five years reduced to barely five per cent.

During the past twenty-five years there were 16,297 cases of compound fractures of all kinds, accidental injuries and gunshot wounds; of this number 1598 died, giving a mortality, in these serious cases, of only a little over nine and eight-tenths per cent.

According to the reports of the hospital for 1873 and 1874 there were 2560 surgical cases treated; of this number 192 died. Deducting 73 cases where death occurred within the first twenty-four hours, as a result of shock, we have a mortality of not quite four and seven-tenths per cent. The reports for 1875 and 1876 state that 2422 surgical cases were admitted; of this number 154 died, and if from this we deduct 44 deaths also occurring within twenty-four hours, we have a mortality of only four and one-half per cent.

The managers, with their usual liberality, having determined that the hospital should have the best form of ventilation, so that every advantage might be given to the sick and wounded to facilitate their recovery, early in 1876, placed a fan and engine in the basement of the west wing. At certain times, as is well known, even open windows will not change the air of a ward, owing to the calm outside; and, of all the various methods of ventilation, that by means of a fan is most likely to give to each patient, uninterruptedly, by day and by night, and at all times of year, a regular supply of fresh, pure air. No system of ventilation can be regarded as perfect unless it is insured by some foreign power, either by means of heated

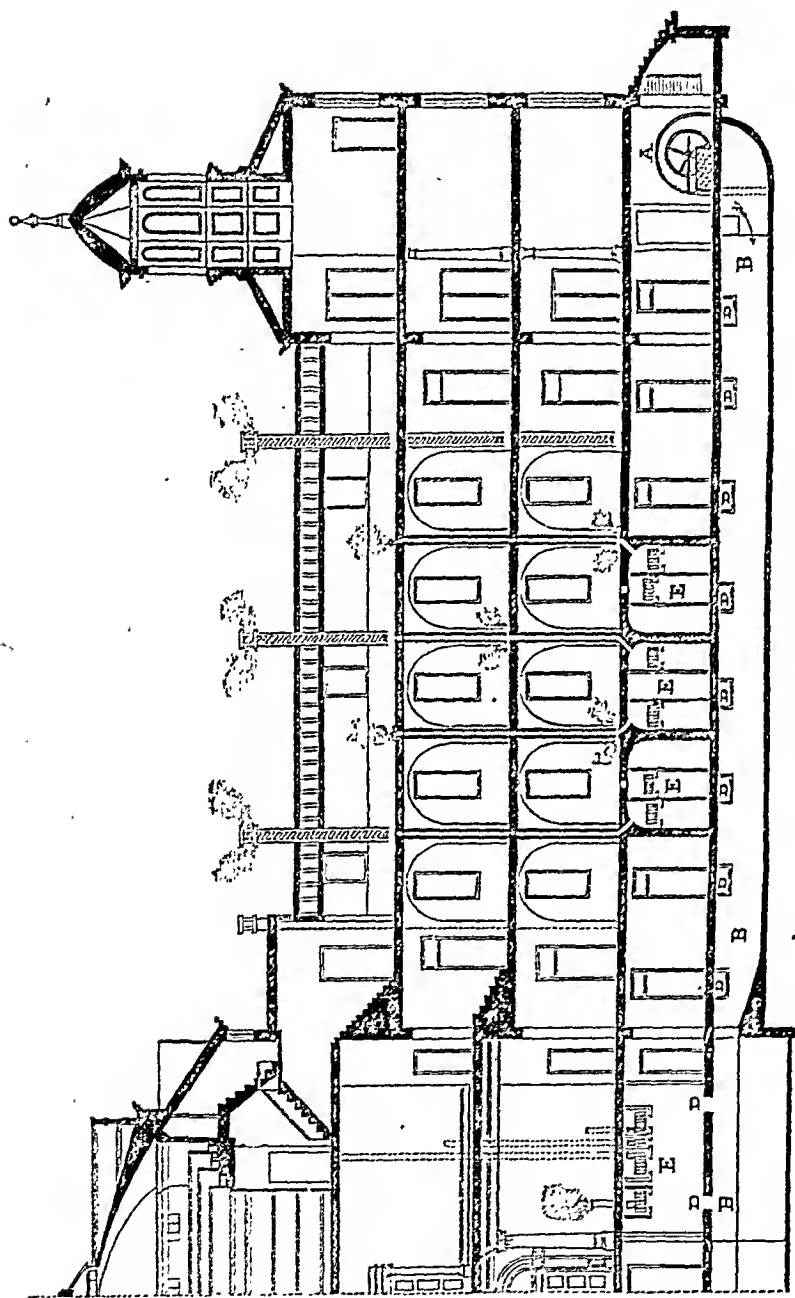
chimney stacks, or a fan, and with the latter it makes but very little difference where the openings for the foul air are placed, whether at the floor or the ceiling, or both, for the fan regulates this, "the change of air is inevitable." All things considered, I am convinced that a fan furnishes the most desirable system of ventilation, and in this view I am supported by the great experience of Dr. Kirkbride, and almost all of those who have made ventilation a special study. It has been said that this system is too expensive; but it will be found that it takes as much fuel to heat ventilating flues or chimneys as it does to operate a fan, and in those hospitals where steam is used for various purposes, as in the Pennsylvania Hospital, the additional amount of steam required for working the fan is judged to be very trifling. With forced ventilation, in cold weather there is necessarily an increased consumption of fuel, a much larger volume of air having to be heated, since it is rapidly forced out of the wards. "All attempts, however, to ventilate without using heat, either as a direct agent or as a generator of power, must be failures. Ventilation in cold weather is necessarily loss of heat, but no money can be expended more wisely than in securing it."

"What are called the difficulties of ventilation, about which so much has been said, nearly always arise from efforts to get more heat out of fuel than there is in it, and to ventilate without losing any portion of the heat that is obtained."¹

During many months of the year when no heating is required, the fan can be used without supervision; but when the wards are heated, great care and constant watchfulness are required. The heat in the steam coils must be so regulated that the wards are kept at the same temperature, and it should be the constant and sole duty of one person to watch both the wards and the outside atmosphere so as to meet the constantly changing requirements of a proper warmth, and decrease or increase the supply of steam to the coils according to the indications. Indeed, it is folly to attempt any regular system of ventilation without some such course is adopted.

In the successful use of a fan the cardinal rule is that it should be always running from year's end to year's end, and that at the same rate of speed. For, as I have pointed out above, the heat of the wards should be regulated entirely by the steam chamber, and any attempt to diminish the supply of pure air in cold weather strikes at the root of the system, and shows that its fundamental requirements have not been met. But so wonderful is the effect of this system, when properly carried out, that hospital wards can be kept almost as free from smell as a private parlor, and I have often been able to give an accurate guess, merely by stepping into a ward, of the number of revolutions that the fan was making per minute.

¹ Kirkbride's Report, 1875.



The cut represents the vertical section, showing one-half of the building on the west; the fan with the engine is at the extreme west end, indicated by the letter A, receiving the fresh air through an opening directly in the rear; B is the main air duct, it is beneath the basement floor, and extends the entire length of the building, with outlets along its course at letters n, which supply the coil chambers where the air is heated, thence discharged into the vertical flues, and conveyed through these to the several stories; all the steam coils are placed upon the same level, except at n, where they are placed near the ceiling; all the change required for the application of the fan, for forcing currents, has been in the construction of a duct beneath a portion of the basement, where no sub-basement existed; the delivery openings are all near the floors, as well as the foul air escapes; the ducts of the latter pass directly up to the roof, as indicated by the broad vertical flues.

In the Pennsylvania Hospital the fan and engine are placed at the extreme end of the west ward, and the air enters from a large window facing the west. It is now driven into chambers placed under the whole length of the building, and in them comes in contact with coils of iron pipe heated by steam, leaving which, it passes upwards, and is distributed to the various wards. (See diagram.)

By experiment I have found that with the fan making 115 to 120 revolutions per minute, the outside air at 30° , the air at the delivery openings in the wards being 120° , the temperature of the air at the ceilings was 70° , and at the floors 68° ; showing how rapidly and thoroughly the hot air is diffused.

Mr. Henry G. Morris, M. E. (by whom the fan was constructed), has kindly furnished me with the following details of the dimensions of the fan, and the volume of air it delivers hourly to each patient:—

“The proportions of this fan, as are all the most successful ones in operation in this country, are based upon the formula of Mr. Robert Briggs, C. E., who has given the subject of ventilation by forced currents the most intelligent consideration.

Diameter of fan over tips of blades 8 feet.

Width of blades at tips 1 foot 7 inches.

Width of blades at inlet 2 feet $8\frac{1}{2}$ inches.

Number of blades 16.

Diameter of inlets or mouths of fan 6 feet.

Area of discharge-opening 30 square feet.

26,000 cubic feet of air discharged per minute at 120 revolutions, under a pressure of $\frac{2}{10}$ inch water column.

Nearly 7000 cubic feet of air per hour for each patient.

The actual power required to perform this work is insignificant, being less than 2 horse power.

The cost of the fan and engine was \$1650.”

ART. XVI.—*Remarks on Hypertrophy of Turbinated Corpora Cavernosa.*

By BEVERLEY ROBINSON, M.D., Surgeon to the Manhattan Eye and Ear Hospital (Depart. of the Throat); one of the Physicians to Charity Hospital, New York. (With a wood-cut.)

HITHERTO the general practitioner and specialist in the treatment of affections of the nose, have alike regarded hypertrophy of the turbinated bones as an ordinary, and almost necessary, sequela of chronic nasal catarrh.

According to my own belief, this appreciation is only in part correct. Without doubt, so-called hypertrophy of these bones is frequently met with, and it is usually true that sufferers from this morbid condition will, when questioned, give a catarrhal history. Nevertheless, we should not

be misled by such facts, for though hyperplasia of tissue in the nasal fossæ is frequently apparent in instances of chronic inflammatory trouble of these passages, it is a result which proceeds as much from improper treatment as from the disease itself. Patients thus affected have been treated, in the majority of instances, during weeks and months, by the repeated application of douches, injections, or sprays to the Schneiderian membrane. These all act in a very similar, though more or less injurious manner. By their contact, the mucous membrane is irritated again and again. The first effect of this irritation is to cause the capillaries to contract, and force from their interior a certain amount of serous fluid. For a time (from a few moments to several hours), the patient breathes more easily through the nose. This benefit, unfortunately, is but temporary, and after a brief period the pituitary membrane again becomes turgescient and angry-looking, and the secondary consequence is serous, or plastic infiltration of the mucous and submucous tissues. When catarrh of the nose is of late date, these results follow one another very rapidly; when it is already ancient, they take a longer time to manifest themselves. And the reason of this is evident to all who are familiar with the structure of the turbinated bones. In chronic catarrh it was formerly thought that the bones themselves became enlarged, and hence the use of the term "hypertrophy of the turbinated bones." In point of fact this is seldom true.

Real hypertrophy, when it exists, has a different seat from the bone itself. It is situated in the erectile stroma, or reticular structure, which lies between the periosteum covering the bone directly, and the mucous membrane which bounds the outer wall of the nasal fossæ. Here we have a formation analogous, or almost similar, to that of the labia majora, or penis, which is readily irritated and capable of rapid augmentation in size, and equally rapid collapse. This we are all familiar with by our experience of what takes place in an acute attack of coryza. The nasal passages may be almost completely occluded, and a few seconds afterwards they may become pervious in a measure, to be again obliterated in less time than one can believe, who has not carefully noted the change.

This phenomenon of daily observation occurs in both acute and chronic catarrh of the nose. Occasionally, both passages are stopped up in an equal degree; more frequently one passage is closed to a greater extent than the other. And this symptom will depend sometimes upon an anatomical condition often encountered, viz., deviation of the septum to the left side of the nose; sometimes upon an accidental, or customary position, where the mere action of gravity will notably exaggerate local infiltration. Possibly, turgescence or collapsus of erectile tissue in this region, and more particularly over the inferior turbinated bones, is under dependence of the vaso-motor nerves which are here distributed; and are, as we know, very sensitive to external impressions. They will undoubt-

edly react, in this place as elsewhere, to all kinds of irritants, mechanical or other; and they will also be influenced more or less by the emotional sentiments. Thus, I am able to explain how it is that an inflammatory occlusion of the nose may change place rapidly from one cavity to the other.

This quick-shifting state is proximately brought about by a greater or less amount of functional activity in the smooth muscular fibres, which form a component part of the trabeculæ and walls of the closely juxtaposed cavities, and this activity is finally attributable to the influence of nerve filaments in a hyper-sensitive condition. The stimulus itself of these peripheral nerves may be either of direct or of reflex origin; and cold hands, or cold feet, may cause obstruction of the nasal passages as effectually and rapidly as an irritant locally applied. Whilst, however, I attribute, in many instances, hypertrophy of the submucous tissue covering the turbinated bones, to a pernicious method of treatment, I do not wish to assert that the catarrhal condition will not produce it to a moderate degree. Moreover, too many examples prove a contrary statement to be true. But if I discover this condition to exist to an exaggerated extent, in the anterior nasal passages, my ordinary experience assures me that it is due in part to a mischievous therapeutic method previously adopted. It is, therefore, considered to be an accidental complication, and not a normal sequela of the primary affection. And I am strengthened in my belief, because I encounter many cases of old catarrh where respiration through the nasal passages is relatively free and undisturbed.

If, however, considerable hypertrophy of tissue be present in the nasal fossæ, it lends additional gravity to an already wearisome and troublesome affection. In these instances, our patients come to us seeking relief, not for excessive secretion of mucus above the palate, or behind the anterior nares, but on account of inability to breathe through the nose. We are told they sleep at night with their mouth wide open. They snore and awake with a painful sensation of dryness in the throat. Their power to expectorate is diminished, though they are greatly annoyed with a small amount of dry, or viscid, secretion, which adheres intimately to the vault of the pharynx. At times, they are conscious of uneasy sensations in their ears (itching, tickling, buzzing, etc.), and by degrees their hearing becomes notably impaired. With adults, these symptoms occasion solicitude, awake reflection, and a physician's advice is sought. With infants, or very young children, the case is different. They have repeated attacks of cold in the head, which finally yield to innocent treatment; and the mothers, or guardians, have no concern about ultimate impairment of their hearing. The child grows, and reaches the age of four or five years. Then it is noticed, with regret and astonishment, that the little one is somewhat deaf, and unable to keep up

with his class at school. At this period, however, there is hope; if the disease be attended to, it will disappear speedily. Unfortunately, such is not the ordinary sequence of these cases. The child's audition remains imperfect in spite of the best care. Sometimes, the hearing power, though permanently disabled, remains stationary after methodic treatment is begun; sometimes it is slightly ameliorated. In a few, and rather exceptional instances, it becomes progressively worse. In the latter class are usually found those who have been treated empirically by means of medicated watery solutions under different forms. This important fact cannot, in my opinion, be too strongly emphasized, and such treatment too emphatically denounced; for during the past three years, I have almost continually met with cases where bad hearing was the evident direct consequence of such treatment.

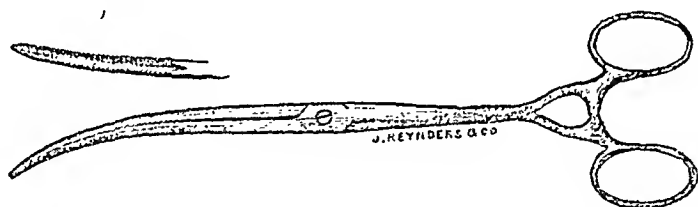
A patient complains of stoppage in his nose, of difficulty of breathing through the nasal passage, especially at night, and immediately the family practitioner recommends the use of a douche of warm-water and salt, night and morning.

But what is the result? Temporary relief follows, and the douche is continued during many weeks. Finally, even passing amelioration is not experienced, and when the nasal fossæ are almost completely blocked up, in consequence of this irrational treatment, a specialist is consulted. The damaging results are then accomplished and a perfect cure is a difficult, if not impossible, matter. The drum heads are sunken, the ossiculæ are trammelled in their movements, and there is a notable vacuum in the tympanic cavity. The barrier to the passage of air through the nose, during normal respiration, becomes almost impenetrable; every effort of deglutition sucks out a portion of residual air from the middle ear, and ultimately the non-balanced external pressure upon the membrana tympani, furnishes us with some of the familiar signs of subacute aural catarrh. And why, we may ask, should all this trouble arise? simply because an insignificant and oft-recurring attack of coryza has been allowed to run its course unchecked. But surely if a clearer appreciation of the foregoing facts were generally possessed, like sequences would rarely be deemed inevitable. Let the cases of hypertrophy of the soft tissue situated over the turbinated bones be properly treated in their initial stage, and we would not be called upon to care for this disease in its ultimate period. Banish the nasal douche, be chary of the frequent and prolonged use even of medicated sprays, and, unless astringent or alterative powders remedy the local condition sufficiently for quiet breathing through the nose in a brief lapse of time, let our attention be directed towards operative procedure. Different methods of surgical treatment have been lauded at different periods, and by different men. Voltolini recommends the galvano-caustic knife; Schrötter continues to have faith in the topical application of nitrate of silver; Gross speaks of tearing

away the redundant mucous lining, and in case of necessity, the middle turbinated bone itself. These different methods have their advantages and drawbacks. The galvano-cautery is somewhat difficult to manipulate successfully, and unless great care be taken there is risk of cauterizing contiguous parts. On the other hand, if it be skillfully used its work is effectual and the cicatrix broad enough to produce by its contraction a sufficient opening through the nasal fossæ for the accomplishment of normal function.

Nitrate of silver is easily procured, and little skill is essential for thorough contact with a considerable superficies of mucous membrane.

Per contra, it has in my hands led to adhesions between the turbinated bones and the septum, after elimination of the slough, and despite the repeated and careful plugging of the nasal passages with seraps of lint immersed in sweet oil, and assiduous care to prevent such trouble. On the whole, evulsion of the mucous membrane by means of a suitable instrument has appeared to me the readiest and most effectual method of accomplishing a radical cure. With this end in view I have thought of various instruments which might fully reply to apparent indications. After a time, the simple one represented in the accompanying wood-cut was made for me, and in four operations in which it has been employed, the result



has been signally beneficial to the patient. The jaws of the forceps are grooved in the centre and serrated on the edges, and for this reason better adapted to catching hold of, and retaining in their grasp, the infiltrated mucous covering. When a firm hold is had of the pituitary membrane after the introduction of the forceps, it is essential to twist the forceps once or twice on its long axis, ever holding it tightly shut before withdrawing it. Rarely do we then fail to accomplish the tearing away of a fairly large strip of the lining membrane of the nose. There is usually a sudden and rather large loss of blood after this procedure, but in a few moments under the influence of cold injections it will entirely cease and need not occasion the slightest alarm. It is well, however, after washing out the nasal fossæ to plug them for a day or two with oiled lint, and thus be assured that the inflammatory swelling of the parts will be kept down. One operation will not usually suffice, and we shall be obliged to recur a second, or even a third time to the use of the forceps. But as it is only moderately painful, and the after-bleeding is useful by depleting the diseased parts, I see no reason why it should not be repeated. Of course, pusillanimous patients will dread this, as they

would any other surgical operation. In such cases, we may with propriety give small doses of ether by inhalation, before practising evulsion. The operation as described has in its favour the fact that it, or some very similar one, will lead to ultimate recovery in cases of excessive increase of tissue over the turbinated bones.

Note.—Since writing this paper I have had reason to believe that my forceps would be improved if made somewhat heavier and stronger, than was at first deemed advisable.

The slight curve of the jaws is still considered as adding to its efficiency.

ART. XVII.—*On the Treatment of certain Forms of Phthisis Pulmonalis by Rest, and the Internal Administration of Atropia.* By ROBERTS BARTHOLOW, M.A., M.D., Professor of the Theory and Practice of Medicine, and of Clinical Medicine, in the Medical College of Ohio.

As respects the hygienical management of phthisis, the most important conditions in its treatment are held to be a dry and rather rarefied atmosphere, an elevated position above the sea level, and an active outdoor life. At the present time, owing to influences which it is unnecessary to explain, amongst the most popular health resorts for pulmonary invalids, are the Mediterranean resorts, Nice, Mentone, etc., and in this country, Aiken, South Carolina, and Florida. Notwithstanding the present popularity of these seaside resorts, it is doubtless perfectly true as stated above, that the most enlightened professional opinion is, that elevation and dryness are the most important qualities of a suitable climate for pulmonary invalids. That an active out-door life is always enjoined on phthisical subjects, will not, probably, be disputed. It is a common spectacle to witness phthisical patients at home, or at health resorts, laboriously engaged in the effort to take active exercise when the heart-beat is habitually at 90 to 120, and the afternoon temperature at 100° to 104° F. This spectacle, from my point of view, is a sad one—the body already consuming at a rapid rate; and the patient hastening tissue-waste by exercise.

It is not my purpose to discuss at present the large subject of a suitable climate for pulmonary invalids, or the influence of dryness and altitude. Time and space will permit me only to consider the question of exercise, and the influence of atropia, as a curative agent in some cases. Clinical facts which happened under my observation several years ago, induced some investigations which conducted me to the conclusion, that the therapeutical practices now almost universally adopted are based on an erroneous theory, and that we do not sufficiently appreciate the importance of rest as a therapeutical measure. Facts which contributed

to decide my opinions are, also, physiological. It will be most convenient to set forth the physiological data first, and then follow with cases on which my conclusions are principally based.

1. *The Rate and Character of the Waste in Phthisis, and the Influence of Exercise.*—No one needs to be told, that to phthisis, more than to any other disease, is the epithet "wasting disease," more especially applicable. Beside the destruction which is taking place in the pulmonary textures, the products of waste are continually escaping through the skin, the kidneys, and the intestinal canal. Beside the albuminous materials, composed of mucus and pus corpuscles, fibrous tissue, etc., the chlorides and phosphates are contained in large quantity in the sputa. Through the skin organic matters, and the salts above mentioned, escape in large amounts, and through the kidneys, urates and uric acid, phosphates, and not unfrequently albumen. Even more rapidly than by any of the above-mentioned channels of excretion, is the waste by the intestines when these organs are invaded by tubercular ulcerations. The elevated temperature of phthisis, like the elevated temperature of fevers, induces those serious structural changes comprehended under the term "parenchymatous degenerations."

When the sources of waste above mentioned exist, and when they are in active operation, what influence must the various kinds and modes of exercise exert? This is a physical problem, to the solution of which we are now, fortunately, able to apply some exact data. The rate and amount of tissue metamorphosis determined by active exercise, have been recently studied by Fick and Wislicenus, Flint, and Pavy. The observations and experiments of the last-named observer are especially fruitful of valuable results; they are the latest, and, at the same time, the most accurate and elaborate of any that have heretofore been made in this domain of inquiry. The observations of Fick and Wislicenus, made on themselves during the effort put forth in the ascent of the Faulhorn, ended the reign of Liebig's theory, which, till then, had been almost universally accepted, notwithstanding the antagonistic observations of Voit. According to the theory of Liebig, force in the body, whether in the form of nervous, muscular, or secretory, is the product of the disintegration of the particular tissue evolving it; in other words, that muscular force meant the oxidation and destruction of a portion of the muscular tissue, nervous force, of nervous tissue, secretory force, of gland tissue. By Fick and Wislicenus, it was shown that on a diet exclusively of carbonaceous food, enormous muscular work could be done without increasing the amount of urea elimination, and that therefore the muscles simply utilized the materials furnished them for the force needed, and did not themselves undergo disintegration. The reaction which, under these circumstances, set in against the theory of Liebig, was stayed by the important researches of Flint, made on the pedestrian

Weston. (*On the Physiological Effects of Severe and Protracted Muscular Exercise. New York Medical Journal, June, 1871.*)

As a result of these investigations Flint concludes that "excessive and prolonged muscular exertion increases enormously the excretion of urea," and that "the excess of nitrogen discharged is due to an increased disassimilation of the muscular substance." The experiments and observations of Flint were thus in entire accord with the theory of Liebig. It was not long, however, until the conclusions of Flint were challenged by a no less distinguished observer than the physiologist of Guy's Hospital, Dr. F. W. Pavy. The performance in England by Mr. Weston of his pedestrian feats furnished the opportunity to Dr. Pavy to repeat the observations and analyses of Flint, and to confirm or disprove them. The results of Dr. Pavy's most accurate, painstaking, and laborious observations are to be found in vol. ii. for 1876, of the London *Lancet*. (*The Effect of Prolonged Muscular Exercise upon the Urine in Relation to the Source of Muscular Power.*) Dr. Pavy finds with Flint, that the amount of urea eliminated is much greater when walking than in the period of rest. Applying the method for ascertaining the "work-value" of the nitrogen excreted, Pavy is conducted to the conclusion that "the force obtainable from the nitrogenous matter disassimilated is totally inadequate to supply the power for the work performed." He does not, therefore, agree with Flint, and with the theory of Liebig; but maintains with Bischoff and Voit, and Fick and Wislicenus, that the muscular force is evolved not from disintegrating muscular tissue, but from the oxidation of the carbo-hydrates and the production of carbonic acid and water. The greatly increased excretion of urea, simply represents, then, the consumption of muscular substance in the wear to which it is subjected in violent and prolonged exercise. So far as we are here concerned, it is most important to note that in muscular exercise not only are the carbo-hydrates consumed, but a considerable disintegration of the nitrogenous materials, also, takes place. During rest, on the other hand, only the consumption of material, sufficient to maintain the temperature of the body and to supply the force for the cardiac and other movements, is required.

In his examination by the methods of mathematics, of the work done in simple walking, Prof. Haughton has shown (*Animal Mechanics*, p. 53) that "a man walking 23.03 miles along a horizontal road, has done as much work as if he had lifted his body up a vertical ladder through a height of one mile."

An enormous consumption of material is, therefore, required in the performance of such tasks as those undertaken by Mr. Weston. During the period of exercise, all the food that can be eaten, digested and assimilated is inadequate, and hence the tissues of the body are soon required, first, and chiefly, the carbo-hydrates (fats, starch, sugar, etc.), and afterwards the nitrogenous (albumen, etc.). To the consumption of material

required to furnish the necessary force, we must add the wear of the machinery represented in the urea-waste. It follows that many days of rest and an abundant food supply are necessary to repair the damages caused by the powerful efforts put forth by the muscles in active exercise. Those who have habitually weak digestion could not execute the tasks accomplished by Mr. Weston, other things being equal, and must occupy much more time in effecting repairs, assuming that the digestive power is equal to the task.

If the physiological exposition above given be correct, it is certain that anything like active exercise must be injurious to pulmonary invalids, must increase the rate of waste already at a rapid rate, and must exalt the febrile heat. As respects the latter, it may be asserted that Weston's temperature fell below normal—to $96^{\circ}.5$ F. on one occasion, after prodigious muscular effort—a fact ascertained by Flint in New York, and Pavy in London. The modern doctrine of the transmutation of force adequately explains this lowering of temperature under these conditions. Under the circumstances of ordinary exercise at ordinary temperature, moderate walking exercise increases, to a slight extent, the body-heat. The more rapid consumption of oxygen, the increased rate of cardiac movement, the chemical action and the mechanical friction taking place in the working muscles, etc., account for the greater production of heat. That the temperature rises but slightly above the normal, is due to the fact that the regulating function of the skin suffices to prevent any accumulation of heat. The body-temperature in health reaches its lowest point in the morning. The quiet and repose of the night explain the morning depression of the temperature. Enforced rest produces the same results. In the number of this Journal for January, I have published some observations showing that a remarkable reduction of the rectal temperature takes place in rabbits when they are kept simply immovable in a Czermack's support. Although not to the same extent, yet in the same way, we find that the human temperature is lowered by absolute repose.

The foregoing physiological data justify the following formulæ for the hygienic management of phthisis:—

Active exercise is hurtful in phthisis when there is present any considerable fever. Quiet of mind and repose of body, as far as they can be secured, are essential to the curative treatment of this disease.

In chronic cases, with limited lesion, and consequently slight fever, moderate exercise may be serviceable, in so far as it improves the appetite and the digestion.

If exercise is considered desirable in phthisis, it should never be violent or protracted, and it should be taken, as far as practicable, when the body is fever-free.

How far the foregoing formulæ are justified in clinical experience will be set forth subsequently. I may, however, anticipate so far as to give

the regulations on this subject which I enjoin on my patients. The amount and kind of exercise must depend on two factors—the range of temperature and the condition of the digestive organs. If there be considerable elevation of the body-heat, if digestion be feeble, especially if diarrhœa exist, no exercise should be taken, except, it may be, the most moderate walking about the house or room. If the fever be slight and the digestion good, moderate walking may be permitted, and the proper time for this exercise is about three hours after meals, when the peptones are about to enter the blood, oxygen being then needed to perfect the changes. All phthisical patients should sit in the sunshine and breathe the out-door air a considerable part of each day, properly clad in cold weather.

2. *The Actions and Uses of Atropia in the Treatment of Phthisis.*—To the distinguished Professor of Therapeutics in University College, London, Dr. Sydney Ringer, is usually assigned the credit of having proposed the use of belladonna, and its alkaloid *atropia*, to arrest the sweats of phthisis. There can be no doubt that Dr. Ringer's publications have been most influential in drawing professional attention to the subject. In his valuable *Handbook*, English edition of 1871, Dr. Ringer describes the applications of belladonna to the various forms of sweating, but he does not once allude to its application to arrest the sweating of phthisis (p. 362 *et seq.*). In the next edition (third) Dr. Ringer states that he "has made many fresh observations, confirming the efficacy of belladonna to check sweating," and he narrates these without referring to the sweats of consumption (p. 437 *et seq.*). I am thus explicit in giving these references, because my own observations preceded the publications of Dr. Ringer by several years.

In a notable paper read a few months ago before the Harveian Society of London, on *Anhidrotics*, by Dr. Milner Fothergill, the remarkable results obtained by this acute physician from the use of atropia in the sweating of phthisis, are admirably set forth, and to Dr. Ringer is ascribed the merit of having first announced the important fact. It is always an ungracious task to set up a claim for priority of discovery; but in this instance the investigations which I have pursued are connected in a series of events demonstrating that my attention has been given to this subject continuously for ten years. In my essay on atropia, which received the prize of the American Medical Association at its annual session in May, 1869, I have stated in unmistakable terms the utility of atropia in arresting the sweats of phthisis. (*Transactions of the American Medical Association*, vol. xx. 1869, p. 675.)

I transcribe the passage referring to this subject:—

"*Atropia in Diseases of the Respiratory Organs, involving Structural Alterations.*—The various forms of cough accompanied by free expectoration are much benefited by atropia. A dry state of the bronchial mucous membrane and irritative cough dependent thereon, are unsuitable for the action of atropia.

I have observed remarkably beneficial results from the combined use of morphia and atropia in cases of phthisis, accompanied by violent cough, profuse expectoration, and hectic. The cough and expectoration, the hectic, and the exhausting sweats especially, are much relieved by it [atropia]."

The addition of morphia to the prescription, which is given in a footnote (p. 675), was made with a view to moderate cough. This declaration in regard to the beneficial effects of atropia in the treatment of phthisis, was written in 1868, and the observations were made during the previous year. The cases which I will presently narrate, the first one especially, will demonstrate that I have given close attention to the action of atropia in phthisis for at least ten years. Students of the Medical College of Ohio, who have attended my courses of didactic and clinical instructions, will remember my frequent allusions to the treatment of the sweating of phthisis by atropia. The theoretical considerations which decided my use of this agent are embodied in the following paragraph on the subject of the arrest of secretion caused by its administration :—

"What is the mechanism of this arrest of secretion? Pflüger has attempted to show that there is a connection between the nerves and the nuclei of the secretory cells of the salivary glands. If this be the case, the secretion would seem to be due to immediate excitation of the gland-cells, and not through the agency of the vaso-motor nerves by regulating the supply of blood. Von Wittich has shown that the sympathetic directly excites the secretion of the parotid, not by regulating the blood-supply passing through this gland, for the influence on its secretion is the same when the flow of blood is stopped. Provost, who has studied the anatomy and physiology of the sphenopalatine ganglion, has shown that avulsion of this ganglion is followed by greatly increased secretion of the Schneiderian mucous membrane. There can be no doubt, then, about the direct influence of the sympathetic over secretion; but the precise nature of this influence is not well understood. When, after the administration of atropia, the fauces are injected, and the face burns, the temperature being actually elevated, there is greatly diminished secretion notwithstanding the increased amount of blood in the capillaries. This result must then be produced by the action of atropia on those filaments distributed to the secreting gland-cells, and not merely upon the vaso-motor fibres."

It is proper to state that these remarks were written in 1868.

More recently, in my *Treatise on Materia Medica and Therapeutics*, I have expressed my clinical experience on this use of atropia (p. 288):—

"No remedy is so generally effective in relieving the sweats of phthisis. The one-sixtieth of a grain at bedtime generally suffices. The author was the first to indicate this use of atropia, in his 'Prize Essay.' Not only is atropia antagonistic in action to that condition of the sudoriparous glands resulting in the sweats of disease, but it equally antagonizes the hyperidrosis produced by such drugs as jaborandi.

"In connection with the subject of the use of atropia in the night-sweats of phthisis, it may be proper for the author to state that he has observed cases of phthisis which appear to him to have been remarkably improved by the continued use of this remedy."

In a practical question, such as the treatment of phthisis, theoretical considerations must be subjected to the test of clinical observation and experience. How much soever the plan adopted may appear to be supported by physiological considerations, it cannot be entertained for a

moment, if the experience gained by treatment is adverse to its utility. When, therefore, I perused the paper of Dr. Fothergill (*The Practitioner*, December, 1876, p. 409), it afforded me great satisfaction to learn that this able physician had arrived at results similar to my own. I quote his language:—

“We are indebted to Dr. Sydney Ringer for our knowledge of this property of belladonna; and the debt we owe to him can only be sufficiently estimated by those who have an extensive experience of phthisis, and who give the drug a fair trial. I have no hesitation in saying that the use of this agent completely changes the aspect of many cases of pulmonary phthisis. For the arrest of the exhausting night-perspirations of phthisis, belladonna is as potent as digitalis in giving tone to a feeble heart. It is quite true that neither is very effective in the last and final stages of disease, for, indeed, nothing is very potent then; but in the early stages, the action of each is very pronounced. In the night-sweats of spreading caseous pneumonia, the administration of belladonna is followed in almost all cases by a decided arrest of the flux; and in many cases the arrest of this flux is accompanied by immediate improvement. A few of the worst cases only, go on entirely unaffected. In the colliquative sweats of the last stage, when the lung is breaking down extensively, the influence exercised is but small; still it usually palliates the drain to some extent even then. The loss of the salts of the body, in profuse perspiration, quickly exhausts the system; and the arrest of this drain commonly permits of the other measures being effective in improving the general condition. Whilst the loss goes on unchecked, improvement is impossible.”

In another part of his paper (page 415), Dr. Fothergill states with some particularity, the kind of cases to which the atropia treatment is especially applicable.

“The most common cases are those where a slowly spreading pneumonia involves one lung to the second, third, fourth, or fifth rib. There is a fast pulse, over 100, a temperature over 100° Fahr., enough, profuse night-sweats, and rapid wasting. It is in these cases that the utility of belladonna is so well seen. As soon as the profuse sweats are checked, the patient begins to pick up; the appetite returns; food is better assimilated; the sleep is refreshing; and the mind is much relieved. In fact the arrest of the drain of salts by the hidrosis at once inaugurates an improvement.”

I am able to confirm in every particular these important observations; my experience has been identical; but some of the cases to which I now invite the attention of the reader, have been under my observation for nine years, whereas Dr. Fothergill's experience is comprehended within the limits of one year. That I have not brought forward my experience before, except in the brief paragraph from my Treatise, written in 1876, is simply due to the fact, that time is required to demonstrate the results in an essentially chronic malady like phthisis. Moreover, in this disease it is difficult to follow the movements of the patients, who are peculiarly prone to seek the advice of every pretended specialist, and who are often absent for change of climate. The cases to follow have been under my own observation, and for a sufficient length of time to obtain results, and they are now accessible for examination.

Illustrative Cases. CASE I.—Mrs. R.—, æt. 25; married; blonde; slight in figure; weight, 95 lbs.; with a narrow chest. Three sisters died of phthisis, and both parents. She had had more or less cough for

several years. After the death of her last sister, she became very despondent, took but little food, and refused to go out of the house. Her cough was almost incessant, she had hectic and profuse night-sweats, and the menstrual flow ceased.

Physical examination, to which she submitted with reluctance, furnished the evidence of extensive consolidation of the superior lobe of the left lung, softening and extrusion, and probably of the existence of a small cavity; commencing deposits in apex of the right lung. Her pulse was habitually above 100; respirations 40; temperature, in the evening, 102° F. Expectoration was purulent and characteristic. Conceiving herself to be doomed, she became indifferent to life; and as her appetite was poor, she took no other nourishment than a little milk, and bananas and oranges, for weeks at a time. She spent the most of her time on the bed, and rarely left her apartment. As she was extremely opposed to medicine-taking, especially if ill-tasting, I gave her a solution of atropia, one grain to $\frac{3}{4}$ ij of water, of which she took two minims, morning and evening. This prescription was made in the winter of 1867-8, and owing to a misunderstanding of my directions she took it in increasing quantity for two years. I was several times, during that period, summoned to see her in consequence of the appearance of decidedly toxic symptoms. An improvement, which is only suitably characterized by the term remarkable, took place in her condition. The cough lessened, the expectoration disappeared, the fever and sweats ceased; she gained very considerably in weight; the menstrual flow appeared again; she became *enceinte*. During the period of pregnancy, she rounded out and presented an astonishing appearance of vigorous health. She was confined without accident, of a healthy male child, in 1871. She had an abundant supply of milk, and was able to nurse her infant the usual period. The child has proved to be vigorous; and free, in a remarkable degree, from the usual infantile diseases. At the present time, Mrs. R— seems in excellent health, and weighs, probably, 115 pounds. She still coughs a little, and has done so, more or less, ever since the results were obtained as above described; but the cough is due to habit. There has been no reason for making a physical examination recently; but some time ago (about one year), I found on exploration of the chest the evidences of the former existence of disease, but no signs or symptoms of lesions now active in the lungs. There seems to me no reason to doubt that a cure has been effected.

Commentary.—This case illustrates in a most striking manner the principle of *rest* as applied to the treatment of phthisis. The almost total cessation of exercise, doubtless, contributed an important share to the curative process. The waste which was already proceeding at a rapid rate, was not increased by muscular effort. Another source of waste—that by the sudoriparous glands—was stopped by the use of atropia. Moreover, in consequence of its action on the respiratory centre, and on the pneumogastric nerve, it is probable that atropia affects the nutrition of the pulmonary parenchyma.

Another feature of this case, which must be regarded as instructive, is the meagre diet. For months Mrs. R— ate only fruit, milk, and a biscuit or two (cracker), and this sparingly. A diet so meagre is opposed to all of our present notions on the subject of feeding in phthisis. The

most potent hydro-carbons are, as everybody knows, now considered essential. She not only refused aliment of this kind, but when she was induced, for the purpose of experiment, to take it, the intestinal disorder which followed seemed to demonstrate that the peculiarities of her appetite were instinctive.

Case II.—Mrs. C. G.—, æt. 45, widow, and mother of two boys. Her usual weight is 124, hair blonde, eyes blue. No hereditary tendency to phthisis.

Mrs. G. began to cough eight years ago, or when she was thirty-seven years of age. The existence of pulmonary disease was then recognized, and she had a variety of treatment, including change of climate. She came under my care six years ago when the symptoms were pronounced. She had lost considerable flesh; her cough was extremely harassing; the expectoration profuse; and she had hectic and night sweats. On physical exploration, the greater part of the superior lobe of the left lung was ascertained to be consolidated, and coarse moist sounds were abundant in this region. During the course of the next year (five years ago) a cavity, estimated to be the size of an orange, was excavated in the left infra-clavicular region, and the area of consolidation extended downwards to the lower border of the fifth rib. Her evening temperature during the first year of my attendance averaged 102.5° F., and the sweats were profuse. No systematic plan of treatment was carried on during the first two years. Mrs. G. saw me occasionally, but she tried on her own responsibility various methods of treatment, including six months of movement-cure and oxygen inhalations. She spent one winter in western North Carolina, another in Florida. It was during the next year (two years ago) only that Mrs. G. began to pursue systematically the plans which I instituted. Her condition then was deplorable. She was much emaciated—her body-weight being only eighty-five pounds. Her appetite was poor, and she vomited after every meal. Her pulse was rapid and weak, temperature in the evening frequently 103° F., and the sweats profuse. She coughed up in the morning an ordinary coffee cup of matter—the contents of the considerable cavity which now occupied a large part of the apex of the left lung. Moist râles, blowing and jerking inspiration, prolonged and blowing expiration, indicated the commencement of caseous deposition in the right infra-clavicular region, fortunately, however, limited to a small area.

Mrs. G. had taken cod-liver oil and whiskey during the greater part of three years, and various tonics and expectorants. I advised that the cod-liver oil and whiskey be continued, and prescribed atropia and morphia as follows: R.—Atropiæ sulph. gr. j; morphiæ sulph. gr. viij; acid. sulph. dil. ℥j; aquæ, ℥viij.—M. Sig.—*Five to ten drops in water three times a day.* This prescription, or formulæ corresponding, the quantity of morphia being lessened considerably as the cough subsided, has been used during the whole of my subsequent attendance. When the vision was much disturbed the dose was reduced, but distinct symptoms of atropinism have been constantly present. Antipyretic doses (gr. xv–℥j) of quinia were occasionally administered. She was encouraged to keep quiet, rather, and take only moderate exercise.

Beside the belladonna or atropia the remedies taken under my supervision were about the same as those which she had been taking for several years before, and the result which followed must be due to this agent.

The gross results may be summed up as follows: Her cough has ceased, and she has no fever and sweats; her appetite is good, and she has gained much in weight. On physical exploration of the left lung the following facts are evident: On inspection a considerable depression exists under the left clavicle, the diametrical measurement indicating a contraction—antero-posterior of half an inch; on percussion, a note high pitched and hard over the depressed area; on auscultation, no moist sounds, faintly tubular breathing, and voice sounds limited to the site of the cavity, and vesicular breathing, and voice sounds over the whole of the left lung. No trace of the lesions which had begun in the right lung.

Although my patient seems now (January, 1877) free from her pulmonary trouble, she is pursued by another evil. The long-continued use of atropia, combined, as it has been, with a diminishing quantity of morphia, induced a habit which even now pursues her with wakefulness, aching of the limbs, etc.

An opportunity to examine this patient will be afforded to any competent physician who desires to ascertain her present condition.

Commentary.—Mrs. G. during the course of my treatment frequently alluded to the beneficial effects of “the remedy for cough.” Without being at all aware of the nature of the agent, or of the purpose for which it was employed, she had a strong sense of its remedial power. This was, probably, instinctive—just as the syphilized patient experiences a sense of satisfaction from the use of iodide of potassium when this agent is removing existing lesions—not a reasonable judgment formed after a consideration of the results accomplished, but a mere feeling of well being associated in his mind with the use of the remedy.

It will be said, doubtless, and with much apparent reason, that in Mrs. G.’s case, the result accomplished is due largely to the favouring influences of change of climate, travel, etc. This criticism, however, is not justified by the history. Although she was undeniably improved by a change of climate on three occasions, the improvement was not maintained. Year by year her course was downward, and she had reached the lowest point when the administration of the atropia was resumed to be continued without intermission until the beginning of the present year.

The greatest difficulty was experienced in securing the faithful administration of the atropia, notwithstanding her own sense of its value, because of the presbyopia, and the confused vision which almost deprived her of the solace of reading during a large part of the time. No damage has resulted in any way from this long-continued use of the atropia in Mrs. G.’s or Mrs. R.’s case.

As I am now collecting numerical data, to show the real value of atropia in the treatment of phthisis, I withhold for the present the publication of my other cases—some of which appear to be completed, but others are still under treatment. Those I have narrated here are amongst the first submitted to the plan of treatment recommended in this paper, and they have been longer under my observation than any other cases.

The numerical method to have any value must deal with a large number of cases, and all the agencies concerned in producing given results must have due weight. I have been fortunate in the number as well as the distinctive character of the cases set apart for investigation. I deal sparingly in dispensary and hospital cases, because they are followed with difficulty, and their statements cannot always be depended upon. As respects the character of the cases, they of course include all the forms of phthisis and all the stages. As respects the results of the treatment it will suffice to state now that all cases are not cured, but that the percentage of recoveries is surprisingly large.

Considerations in regard to the Administration of Atropia.—As the susceptibility to the action of this agent varies in different individuals, an inflexible rule as regards the dose cannot be made. I have usually administered about $\frac{1}{160}$ th of a grain (five minims of a solution of one grain to the ounce of water) two or three times a day. As the effects of atropia are very persistent, usually two doses *per diem* will suffice to maintain a constant physiological action. If the quantity be so large as to produce great dryness of the mouth, retention of urine, and serious disturbances of vision, the patient may refuse to continue it. Moreover, large medicinal doses, although entirely safe, may cause irregular action of the heart. My observation is that the persistent daily use of moderate doses is preferable to the occasional administration of large doses. It suffices to cause moderate dilatation of the pupil, slight dryness of the mouth, and a little flushing of the cheeks.

When the cough is troublesome morphia may be combined with the atropia. When vomiting occurs strychnia may be given in the same prescription. When indicated, the alkaloids, strychnia, atropia, and morphia may be dissolved in diluted muriatic acid instead of distilled water.

A serious difficulty frequently encountered in the treatment of phthisical subjects is a restless and hopeful disposition, which leads to frequent changes in the medical attendant, and to the trial of every new remedy. As in most cases, considerable time must elapse before any permanent improvement can be effected, it may happen that all the moral resources of the physician will be sorely tried to induce the patient to use the remedies in a proper manner and for a necessary period.

CINCINNATI, Ohio.

ART. XVIII.—*So-called "Second Sight" of Old People.* By SWAN M. BURNETT, M.D., of Washington, D. C.

LEGENDS of so-called "second sight," in persons advanced in years, are by no means uncommon, but I am not aware that any scientific examination of such a case has been placed upon record.

The following instance has been under my observation for the past two years, and its interest to optical science is sufficient, I think, to warrant its publication.

M. L. P., aged 85, began to use glasses for reading at about 40. He found it necessary to increase the strength of his glasses once subsequently. When about 70 he began to read his paper without the aid of spectacles, and has since that time been able to discard them altogether for reading even the finest print. He reads Jager 1 at 18 inches with ease. His distant vision is $\frac{20}{60}$ without the aid of glasses, but with $-\frac{1}{40}$ (-1 dioptric) it equals nearly $\frac{20}{60}$. Not all the letters of No. 20 of Snellen are made out, but all of No. 30 without trouble. He has now, and has had for some years, a slight conjunctivitis dependent upon an eversion of the *puncta lachrymalis* due to relaxation (senile) of the orbicularis.

Some years ago, about the time, he thinks, when he threw away his glasses, he suffered from subjective sensations of light in the form of coloured flashes, which persisted for some time; his eyes were also at that time sensitive to bright light and were somewhat injected.

The ophthalmoscope showed that lack of transparency in the lens which we always find in old people, but not in excess of what is commonly met with. This cloudiness was more intense in the centre of the lens. The details of the fundus presented nothing abnormal except here and there small dots of pigment.

The patient had a brother, who died at the advanced age of 93, who enjoyed his "second sight" for more than 20 years preceding his death.

Here we have, beyond question, a myopia that developed itself after the age of 70. The question now is as to the causes leading to its development.

That persons affected with incipient cataract may become myopic is well known. The subject was discussed at the meeting of the Heidelberg Ophthalmological Congress for 1873.¹ The discussion was participated in by Arlt, Wecker, Snellen, Ad. Weber, Förster, Meyer, and Horner. All of these gentlemen had seen myopia developed in those affected with incipient cataract. Weber had seen a $M = \frac{1}{2}$ developed in the course of two years, and in another case $M = \frac{1}{2}$ in the course of a few weeks. In both $V = \frac{1}{60}$. The lens in both instances showed a grayish-blue opacity of the nucleus with a grayish zone, diffuse and semi-transparent, of the corticalis. As to the cause of this increase of the static refraction of the lens, opinions were divided between an increase in the volume of the lens, and an increase in its index of refraction.

As regards the case just reported, we would not be warranted in calling it incipient cataract. Notwithstanding the conjunctival catarrh that was present, vision was almost $\frac{20}{60}$, which is even better than the acuteness of vision usually found in individuals of that age. Mr. Carter, in his late work on Diseases of the Eye, gives the acuteness of vision for 80 years as $\frac{1}{60}$. (Amer. ed., p. 60.) In Weber's cases, above quoted, V was $\frac{1}{60}$. And besides, the length of time (15 years) that the M . has been in existence without any marked deterioration of vision precludes the idea of incipient cataract.

That hypermetropia may be developed in somewhat advanced life is now a generally accepted fact. In 1861, Jäger, Jr.,² wrote of it as follows:—

¹ Zehend. Monatsblat. 1873.

² Ueber die Einstellungen des dioptrischen apparatus im menschlichen Auges. Wien, p. 101.

"In many other cases in normally constructed eyes, and even in those of a weak myopic build, there is developed, in consequence of a rapidly developing sclerosis of the lens, and for that reason by preference in old people, in addition to a presbyopia [Fernsichtigkeit], also an hypermetropia [Übersichtigkeit]."

"In this manner is produced, on the one hand, an increase of existing hypermetropia, and on the other hand, a decrease of any existing myopia."

"Some lenses show, under these circumstances, a considerable diminution in thickness; the lens substance shrivels, dries up as it were, through loss of its watery constituents, especially in the direction of its axis. In consequence of this, the surfaces, the anterior surface in particular . . . lose their previous strong curvature."

Donders,¹ in speaking of the curves representing the positions of the near and far points of distinct vision at the various periods of life, says:—

"Up to the fortieth year it (the curve r) remains at the same height; but from that time an extremely slow descent occurs, the emmetropic becoming at the fiftieth year somewhat hypermetropic, which H. at the 80th year amounts to from $\frac{1}{4}$ to $\frac{1}{6}$. This acquired hypermetropia may, finally, become absolute, that is to say, that not only accommodation for diverging but even parallel rays becomes impossible."

It appears then that the static refraction of the eye does undergo a modification with age, and that it is due to senile changes in the lens, changes, however, which belong to the physiological evolution of the tissue. The nature of these changes appears to be, sclerosis or increase in the density of the lens-substance, and, in the case where hypermetropia is the result, an equalizing of the density of its substance and an increase in the radius of curvature of its surfaces. This latter appears to be the usual, natural, and, so to speak, the physiological course of these changes, but we know of no laws governing the process that make it necessary that it should invariably follow this course. There exists no reason why this increase of density of the lens-substance may not begin in the nucleus of the lens and remain confined more or less to that region. The effect of such a state evidently would be to increase the refractive power of the lens, since the greater the difference between the density of the nucleus and corticalis, the greater the index of refraction of the lens as a whole.

In this way we think the appearance of myopia in advanced years may be accounted for; and to be in keeping with the name Donders has given to the opposite state, it might be called *Myopia acquisita*.

But the *Myopia acquisita* may owe its origin to yet another cause. There may come about, from some cause, an elongation of the antero-posterior axis of the eyeball. Such a condition could be the result of a sclerotic-choroiditis as we have it in the myopia of younger years.

We may have, in other words, in *Myopia acquisita*, as in the myopia of earlier life, the producing cause either in an excess of refraction or in an elongation of the axis of the eye, and to differentiate the one from the other is by no means an easy matter, as has been clearly shown by Landolt.² In any case, it must be largely a matter of probability as to the one which plays the more important part. If we have a history which points to a *sclerotic-choroiditis posterior*, then we would be justified in concluding that we have a *Myopia axile* (Landolt); but if we have no such history it would be probable that the senile sclerosis of the lens, instead of following its usual course, and beginning in the corticalis, had started in the nucleus,

¹ Anomalies of Refrac. and Accom., p. 208.

² Ann. d'Oculist., t. lxxi. p. 49.

and that the M. was due to excess of refraction. And, moreover, in any individual case it would not be unlikely that both causes might be in operation, the one augmenting the other, or that a *M. axile* would, to a greater or less extent, be counteracted by a hypermetropia from deficiency of refraction in the lens.

As regards our own case, it is probable that there was a sclerotic-choroiditis, the evidence of which lies in the subjective symptoms of flashes of light and slight photophobia, and in the objective appearances of the dots of pigment in the fundus, manifested ophthalmoscopically. And from this we would be inclined to regard it a case of *M. axile*, though the appearance of the lens is such as we would expect to find in a case where the sclerosis of the lens-fibres had been most active at the nucleus.

The important fact, however, that we have learned from a study of the foregoing case is, that in the cases of "second sight" there is no essential rejuvenescence, as seems to be popularly believed. No power of accommodation is regained, but the far point of distinct vision, instead of being at infinity, is, through the development of the M., brought within the distance at which reading, writing, etc., are carried on, and thus glasses, which usually supply the place of accommodation in accomplishing this end, are able to be dispensed with.

November, 1876.

ART. XIX.—*Two New Instruments for Secondary Cataract Operation.* By GEO. STRAWBRIDGE, M.D., of Philadelphia. (With two wood-cuts).

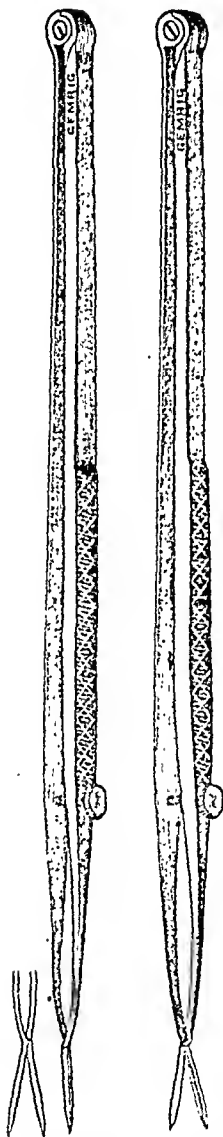
ALL operations, as at present practised on secondary cataracts, practically have for their object, either the making of a large opening through the opaque membrane, or entirely removing it, without causing traction in the ciliary bodies (a fruitful source of inflammation.)

Such an opening can often be attained by simply puncturing the membrane with a cataract needle, or a Graefe or Baer cataract knife, but, as a rule, an opening so made is not sufficiently large, and can easily close, and so defeat the object. A more effectual way is found through the double needle operation of Bowman, but open to the objection of its being an operation difficult of performance.

The double hook operation, viz., dragging out a piece of membrane by two small blunt hooks through opposite corneal openings, and excising them, is certainly very effectual, but unfortunately very liable to involve the eyeball in destructive inflammation.

The extraction of the membrane, through a linear incision by a sharp hook or forceps, is also a dangerous proceeding, setting up perhaps severe irido-choroiditis.

In order to fulfil the above indication more completely than is done by the ordinary operation, and at the same time to avoid the serious consequence often following excision of the membrane, I have devised an instrument (see Figure 1), which consists of two needles, fitting closely on each other and having an *outer cutting edge*.



a. Fig. 1. Fig. 2.

The needles are 8 mm. long, and end in a handle of sufficient length to form a well-adjusted instrument. The handles are fastened together by a screw, the needles dovetail together, 8 mm. from their points, and the effect of pressing the handles together is to cause the needle points to spread up to 5 mm. according to the amount of pressure used (see Fig. 1 a). The instrument is also provided with an adjusting screw to accurately approximate the needle points.

Method of Operation.—Pass through the cornea as with an ordinary cataract needle, puncture the false membrane at any desired point, and by finger pressure on the handles of the instrument cause the needles to separate to any desired extent, and so form a free large opening. The needles cutting from each other cause any *tension* that may be created in the false membrane to be located *between* the *needles*, and so avoiding any involvement of the ciliary bodies. After the first cut is made the instrument can be readily turned on its axis so as to make successive incisions in any desired direction, and so greatly enlarge the opening.

By this means can be accomplished all that even the double needle operation of Bowman, or the double hook operation can affect, while the amount of irritation so produced is not greater than that from an ordinary needle operation. The instrument can be used with great ease.

In some cases where the membrane was very extensible and liable to give way before a cutting instrument, and also in those cases where the lessened tension of the membrane, a result of the first incision, formed an obstacle to succeeding incisions, it was found that the addition of the scissors movement to the instrument was desirable, in other words, a double-needle instrument having an outer cutting edge, and with the inner edge cutting as a pair of scissors. Fig. 2 represents an instrument so constructed. It resembles the ordinary scissors reduced to needle size, with an outer cutting edge.

The dimensions are the same as those of Fig. 1, and the method of using it the same except that the spreading of the needle points is caused by relaxation of the finger pressure on the handles, while in the first instrument the reverse was the case. With this instrument the first incision is made with the outer edge, the successive ones with the inner edge working as a pair of scissors.

The two instruments are especially adapted for operations on false membrane—secondary cataract operations so-called—but with slight modifications (chiefly in lengthening the needles), they can be used in the treatment of detached retina, to make a free opening from the vitreous humour to the sub-retinal pouch as well as through the sclerotic. The wood-cut represents the actual size of the instruments.

REVIEWS.

ART. XX.—*A Practical Treatise on Diseases of the Skin.* By LOUIS A. DUHRING, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania; Physician to the Dispensary for Skin Diseases, Philadelphia; Author of "Atlas of Skin Diseases," etc. 8vo. pp. 618. Philadelphia: J. B. Lippincott & Co., 1877.

THE author dedicates this work to his former master, Prof. Hebra, one who certainly deserves this and any honour that the profession in this country has in its power to bestow, for the many thoroughly educated pupils he has sent back to her, as well as for his unparalleled services in the advancement of dermatology. Of the former certainly no one is more accomplished or better fitted by temperament to write a new book on skin diseases than Dr. Duhring. It has been his object to prepare a concise and practical treatise for the use of the practitioner, without attempting to make it exhaustive, or a medium for the discussion of disputed points, or the presentation of theoretical questions in dermatology; and we are happy to say in the beginning that he has succeeded admirably. The nomenclature and classification are mainly those of Hebra—as the simplest and best system yet devised, we agree with the author in believing; that he did not attempt a new one we congratulate him and all students of dermatology. The illustrations, sixteen in number, representing sections of the healthy skin and the vegetable and animal parasites, are simple and good. The book is well printed, and makes a handsome volume of six hundred and eighteen pages.

The first part is general in character, devoted to an exposition of the anatomy of the healthy skin, and to concise considerations of the symptomatology, etiology, pathology, diagnosis, treatment, and prognosis of its diseased conditions. To this difficult and important portion of his work the author has given careful attention, and a close study of it, before consulting that which treats of the special diseases, will well repay the general reader. Its definitions and descriptions are clear and comprehensive; and the points upon which we should take issue with the author are few and of minor consequence. In his account of vesicles and their formation, he states that the anatomical seat is "between the mucous and horny layers of the epidermis." We should have said that this is so in some cases, while in others the separation of the tissues by the serum is wholly within the rete, and that in others the cavity is formed between the cells of the horny layer.

The author is inclined to regard diet as a prime factor in the causation of skin diseases, not, as he admits, that this can be directly demonstrated, but because he finds some error of digestion in so many cutaneous affections. "Each part of the digestive tract," he says, "should be gone over in turn, with leading questions, assuming for the most part, that some functional trouble does exist. Here, in the alimentary canal, we may find the key which will disclose the cause of a great number of skin

diseases." Such an investigation would no doubt detect similar faults in as large a proportion of the patients who seek relief at general dispensaries and hospitals for every kind of sickness. Such faults of digestion, too, without any appreciable accompanying disturbances of the skin or other organs, are the most common of all ills, and in only exceptional instances are they to be detected to any marked degree in the course of cutaneous affections. We fail to see, therefore, why such "causes" can be regarded as more instrumental in the production of diseases of the skin than of any other tissues and organs of the body.

In the matter of treatment certainly no more judicious rules could be laid down than the following: "The most satisfactory results are to be obtained from the conjoint employment of both plans of treatment. Where, however, external means are sufficient to relieve the trouble both promptly and permanently, internal treatment is not only superfluous, but may even be productive of harm." Now the question in dispute between those who support in the main on the one hand the internal, on the other the local method of treatment, has arisen largely in consequence of theoretical views entertained by them concerning the etiology of cutaneous affections; the former assuming that these diseases are mostly constitutional in character and, therefore, require internal treatment. Unfortunately, this is a question very easy to dispute over, because it is almost wholly beyond demonstration, but so far as it may be proved by the results of treatment, the test, as advised by Dr. Duhring, should be practically conclusive. The trouble is that those who contend for the constitutional origin of skin diseases will not consistently apply it. They argue that the internal medication is all-essential, and yet do not refrain from using the same external methods of treatment as those who rely almost wholly upon the latter and find it sufficient. Let, on the one hand, those who maintain that eczema and acne, for example, are generally due to disturbances of this or that portion of the internal economy, treat one hundred consecutive cases of each affection (leaving out those of the former due to artificial causes), by remedies introduced into the stomach in accordance with the etiological theories of the individual observer, and by these means alone. On the other hand, let the same number of cases of these affections be treated by external applications alone. Let the results in the two series, both as to "promptness and permanency," be compared. We should then be able to discuss the direct issue in controversy.

So far as we know, an approach to this method of exclusive treatment has been practised on one side only; Professor Hebra has, for a long series of years, been in the habit of relying upon external treatment alone in the great majority of cases of these among other diseases. Who is a keener observer than he? who can show better results as a practitioner? We have never heard, however, that the most ingenious inventors of theories of internal causation relied in any great measure exclusively upon internal remedies in the treatment of their cases. They seem only too willing to resort to the topical applications which the other side has proved to be generally all-sufficient, at least, to produce as prompt and permanent a cure as the nature of the disease permits. Practically, however, the question in dispute cannot be so abruptly divided, because in a not inconsiderable proportion of cases some faults of the general economy or of other organs may be present, which, although not directly the cause of the skin disease, yet may modify or aggravate

it, and thus interfere with the action of the appropriate treatment. The removal of any morbid influence which depresses the general system will of course permit a more prompt response on the part of the cutaneous tissues to the action of local applications, just as the administration of tonics will, when required, stimulate them to a similar activity. It will not do, therefore, to assume, from the favourable action of internal remedies in mixed treatment, the internal or constitutional nature of skin diseases.

The author divides cutaneous affections into nine classes, and distributes them in the following order, which, as above stated, is a slight modification only of the system of Hebra: disorders of secretion; hyperæmias; exudations; hemorrhages; hypertrophies; atrophies; new growths; neuroses; and parasites.

Each individual affection is treated of in the following manner: 1. The synonyms are given, a matter in the present amorphous state of nomenclature of great importance. 2. A definition in a few clear words presents the characteristic features of the disease. 3. The symptoms of the affection in all its stages and varieties, subjective and objective, are fully detailed in a simple graphic style. 4. The etiology is considered with as much perspicuity as the general uncertainty of the theme allows. The author entertains, we should say, more positive opinions in general upon this subject than most writers of the German school, but fails to impress us that they rest upon a less conjectural basis than the views of others who would trace most diseases of the skin to internal disturbances. 5. Under pathology the anatomical changes in the cutaneous tissues are given after careful analysis of the results of the many recent investigators in this field of observation. 6. Diagnosis. Unusual attention has been given to the subject of differential diagnosis, the most characteristic features of each affection being contrasted with those of others which might be mistaken for it. Unfortunately in the most doubtful cases, where such discrimination is so essential, these typical appearances fail and exceptional manifestations take their place. 7. Treatment is discussed with that care and detail which will enable the general practitioner to learn the appropriate remedies to be used in every stage of disease. The rules, general and special, are in the main conservative and most judicious, no specifics being vaunted. In a few instances only has the author been induced to make favourable mention of remedies which we should prefer to see endorsed by the results of his own observation. This portion of the book forms one of the most practical treatises on the management of skin diseases yet written. 8. Prognosis receives proper consideration in relation both to the natural course of the disease and to therapeutics.

It is not our purpose to designate all the points of variance between the opinions of the author and of other writers on dermatology, because a book without such individuality would be without interest or savor, and we have space but for few critical comments.

In speaking of seborrhœa the author says that after infancy it is not encountered again, as a rule, until puberty or adult age, and that the general health of the patients is always "below standard." Neither observation accords with our own experience; we see numerous cases of seborrhœa in children of all ages, and it is only in exceptional instances that patients of any age, from the wealthy classes at least, those who in large numbers seek relief from the specialist for this affection alone or

for its accompanying alopecia, present any other diseased condition whatever.

In describing the varieties of eczema, Dr. Duhring states that eczema vesiculosum is the commonest. If by this the reader be led to infer that vesicles are the most common lesion in cases as they present themselves for treatment, we would offer, on the other hand, the opinion that it is often difficult to find a single example of the typical vesicle amongst any twenty consecutive patients with the disease in attendance upon a skin clinic, and without asserting that it does not frequently occur as a transitory phase of efflorescence in acute stages of the affection, we do not hesitate to say that in comparison with other lesions it is rarely found.

Under the title herpes febrilis the author includes herpes facialis or labialis and herpes progenitalis, separating them from zoster. Herpes labialis from its frequent association with general febrile affections may deserve such distinction of title and position, but we fail to see how herpes preputialis does, as it rarely, if ever, is associated with any general disturbance, and may often be traced directly to immediate local irritation. In the treatment of zoster, he is inclined to regard the galvanic current as a "prompt and effectual means of relief." It is difficult to see how a ganglion in as profound a state of inflammation, and even structural disorganization, as has been discovered in the few instances where post-mortem examination has been possible in the course of a zoster, can be brought into a healthy condition promptly by the galvanic current, and it would have added largely to the interest of the subject if it had been stated by how much short of the average duration a series of cases of zoster had been abbreviated by such treatment.

The author admits dysidrosis into his list of diseases. This is an affection so-called by Dr. Fox, and regarded by him as a disease of the sweat glands. We have never seen a case of vesicles affecting the palmar surface of the hand and fingers, the contents of which we could regard even from the first as non-serous. We are not surprised, therefore, that Dr. Duhring states that it is rare in this country, and that he has never seen cases so extremely developed as those described by Fox. Its reported association with eczema, in its later stages, is very suggestive.

Impetigo contagiosa is another newly discovered disease which the author recognizes. Of a class of occasional cases marked by the peculiar symptoms supposed to characterize this affection, there can be no doubt. They are met with in isolated instances not very infrequently, and sometimes in groups so intimately connected as to suggest a common cause if not contagium. We have never been able to discover any parasitic element peculiar to the affection, nor any positive data upon which the title contagiosa could rest; indeed, in the most remarkable instance of the affection we have seen, where many members of a large household were affected, there was no possibility of contagion, but there was a common cause operating upon all simultaneously. The author says it is auto-inoculable; so is the lesion in pemphigus.

The author's observations upon alopecia areata are at variance with our own in several particulars. He speaks of the loss of hair as occurring either all at once, "the patient awaking to find unexpectedly a handful of loose hair," or that the fall may be prolonged, "several days, or even longer elapsing, before it has all been cast off." We remember but a single instance, one among a great many, in which the loss was as

sudden as thus described. Generally the patient discovers by accident the circular bald patch or patches without knowing how long they may have previously existed. Almost without exception, too, the denuded areas continue to increase after discovery for weeks, or even months at times, in spite of the most vigorous treatment. In cases which have been under constant observation for years, in which the hair will fall several times in succession after reproduction, it is in this same comparatively gradual way that the loss is seen to occur. Neither is it in accordance with our experience that the bald patch is always in a "white, shrunken, atrophic condition;" not infrequently is the patch and the scalp surrounding it for a third or half an inch in extent, puffy, oversensitive, and in a markedly hyperæmic state in the early stages of the affection. In fact there is so great a variation in the phenomena, as presented in a large series of cases, as to suggest the probability of corresponding lack of unity in their etiology. So far as the anatomical changes in the structure of the hair and follicle are concerned, we have never been able to recognize any marked differences between them in this and in some other forms of alopecia; and without entering upon the mooted question of its parasitic origin, we cannot admit the accidental and possible coexistence of *tinea tonsurans* as a serious element in it. In the matter of prognosis also, we cannot wholly agree with Dr. Duh-ring, that "sooner or later the hair will almost surely return." When the disease confines itself to one or even more small patches, and the patient is young, there is a pretty sure promise of eventual and permanent recovery, but in more advanced life, and where wider areas are swept over, the chances are by no means so favourable; cases of this sort often remaining under treatment of the most stimulating nature of doubtful result for years in succession, and finally terminating in the loss of every hair upon the head and body.

In the preface the author alludes to the interesting question of possible variation from the European type in skin diseases in America. In connection with this comparative prevalence, his remark upon the occasional occurrence of leprosy in the United States, that the existence of endemic cases here is doubtful, demands notice. At the recent meeting of the Dermatological Section of the International Medical Congress at Philadelphia, cases were mentioned by two gentlemen which settle beyond doubt, we think, the fact of such occurrence amongst us.

Under the vegetable parasitic diseases he includes *tinea favosa*, *tinea versicolor*, and what he in several places speaks of as three affections, viz.: *tinea circinnata*, *tinea tonsurans*, and *tinea syeosis*, although stating that they are caused by one plant, and that the one may become the other. We see no more reason for treating them as three affections than for regarding *tinea favosa* upon the scalp, and its early stage upon the general surface as two distinct affections. One and the same circle of ringworm starting upon the temple of a child, may be, as it enlarges, in its upper half *tinea tonsurans*, and in its lower *tinea circinnata*; or again starting upon the cheek or neck of a man, it will be *tinea circinnata* upon the hairless parts, and may become *tinea syeosis* on the bearded portions of the skin. It is only one affection presenting various appearances according to seat, and in no way deserves the separation under distinct sections given it by the author. He also expresses the opinion that in this, as well as in the other vegetable parasitic affections, "a peculiar condition of the skin is quite as essential to the development of

the disease as the presence of the fungus itself." We have never seen reason for such a theory, but many times we have seen ringworm introduced into a healthy family, and affect every member of it. There is, no doubt, a difference according to individual cutaneous temperament in the reaction of the skin under the parasitic irritation, and in the secondary manifestations, but nothing more that we have ever observed. *Tinea favosa* and *tinea versicolor* are with so great difficulty communicated to other hosts that nothing definite can be inferred from their occurrence in substantiation of such a theory. Neither have we seen cause to believe that these growths attach themselves more readily to the skins of persons whose general systems are "depreciated," as Dr. Dühring and other dermatologists maintain. We do not recognize favouritism as an element any more powerful in the etiology of the vegetable than of the animal parasitic affections.

In conclusion, we would again express our high opinion of this work. The author has more than fulfilled his promise of making a practical treatise for the practitioner; he has made it also the most complete and fittest text-book for the student that exists in the English language.

J. C. W.

ART. XXI.—*Atlas d'Ophthalmoscopie Médicale et de Cérébroscopie montrant chez l'Homme et chez les Animaux les Lésions du Nerf Optique, de la Rétine et de la Choroïde produites par les Maladies du Cerveau, par les Maladies de la Moelle Epinière et par les Maladies Constitutionnelles et Humorales* Par E. BOUCHUT, Médecin de l'Hôpital des Enfants malades; Professeur Agrégé de la Faculté de Médecine. Quatorze planches en chromolithographie, comprenant 137 figures, et 19 figures intercalées dans le texte. 4to pp. 148. Paris: Baillière et Fils, 1876.

Atlas of Medical Ophthalmoscopy and Cerebroscopy, showing the Lesions of the Optic Nerve, of the Retina, and of the Choroid, produced by the Diseases of the Brain, of the Spinal Cord, and by Constitutional and Humoral Diseases. By E. BOUCHUT.

OF the advances made in ophthalmoscopy during the last fifteen years the most important are those which have shown the intimate connection existing between intra-ocular lesions and various cerebral, spinal, and general diseases. Not only has it been demonstrated that affections of the optic nerve, retina, and choroid are much more commonly present in such connection than had formerly been suspected, but also that, with symptoms of nervous disturbance, the fact of their presence is often of great value for the formation of a diagnosis between functional and organic disease within the cranium. At the same time the conviction has been forced upon the oculist that the domain of idiopathic neuritis and retinitis must be restricted within very narrow limits, to say the least.

As is so frequently the case in the history of investigation in new fields, the tendency was at first to attribute to appearances arbitrarily classified as distinct a special relation to certain more or less definite forms of disease. But following gradually the evidence of the great frequency of retinal and optic nerve changes with lesions of other organs has come

also the evidence that varied forms of neuritis and neuro-retinitis may be found with one and the same disease, and that many different diseases may cause inflammations of retina and opticus indistinguishable from each other by their ophthalmoscopic appearances and often even under the more minute analysis of the microscope. That progress has not been more rapidly made in this direction must be mainly ascribed to the separation of ophthalmology from general medicine. The oculist seldom has had the opportunity to examine an extended series of cases, and the general practitioner has been usually unfamiliar with the use of the ophthalmoscope.

To this there have been, however, some notable exceptions, and it is to the practice of routine examination with the ophthalmoscope by a few general practitioners, particularly in England, that a considerable part of our present knowledge of the subject is owed.

To Bouchut certainly belongs the credit of having early adopted a belief in the advantage of systematic investigation of the fundus of the eye in cranial and other diseases, and the book before us is the result of fourteen years of clinical researches, chiefly on children, and is based on eight hundred personal observations. In the previous publications of the author on the connection of intraocular disease with disease of the brain or its membranes, the views expressed as to the amount of diagnostic value to be placed on the appearances to be observed with the ophthalmoscope, have seemed to us to be in many respects too sanguine, the disposition to individualize the retinal changes found with different intra-cranial lesions too marked to be in accordance with observed facts. At the very commencement of the present volume indications of a similar tendency appear. The term *cerebroscopy* placed on the title-page we must consider rather imposing than exact, nor, though indisposed to depreciate the value of the ophthalmoscope, can we quite agree with the statement in the preface that, "one may say, without exaggeration, that it is for diseases of the brain and spinal cord what percussion and auscultation are for diseases of the chest," even though Jaeger ends his latest monograph¹ with a prediction of its value in the future in almost the same words. Were this the only fault to be found, however, it might certainly be regarded as no very serious one.

Unfortunately there is an egotism and apparent straining after effect manifested so often throughout the book that it cannot but impair confidence in the assertions of the author. Then we find general statements made positively and not substantiated by the details which follow, or based on theories, the arguments for which are anything but convincing.

The introduction is largely taken up with the endeavour to secure for himself the honour of having been the first to point out that a great variety of acute diseases of the brain and spinal cord could be recognized by means of the ophthalmoscope in the eye. Here (p. 11) he asserts that he was the first, he might have added the only one to the present time, to discover tubercles of the retina during life. But afterward, when treating of retinitis of cerebral origin, he says: "In several cases of tubercular meningitis I have seen these little granulations, which I at first considered as tubercles of the retina But, not to invent an hypothesis, they may be considered, from the histological analysis, as cases of nodular steatosis formed in the granules of the retina. According to my idea,

¹ *Ergebnisse der Untersuchung mit dem Augenspiegel.* Wien, 1876.

these are little inflammatory miliary exndations undergoing fatty degeneration." Then on the following page appears a plate of the appearances under the microscope with the sub-scription "caseous tubercle of the retina;" and again, on p. 53, when these changes are again referred to, we find, "That is what I have called tubercles of the retina," and a reaffirmation that they were not true tubercles.

Contradictory and incompatible statements are not infrequent. Thus, p. 18, we learn that, "In meningitis these lesions (of the fundus oculi) are almost constant; they vary with the form of the disease, according as one has before him a tubercular, typhoid, rheumatic, erysipelatous meningitis;" and p. 79, "From swelling and hyperæmia of the optic nerve may be inferred a primary degree of neuritis, which announces hyperæmia of the meninges, of the brain, or of the cord. This form of congestive neuritis accompanies simple or typhoid meningitis; tubercular meningitis at its commencement; erysipelatous meningitis following erysipelas of the scalp; rheumatic meningitis."

On p. 22, we read "steatosis of the retina indicates steatosis of the kidneys, from parenchymatous nephritis, etc.;" on p. 80, "From steatosis of the retina may be inferred steatosis of the cerebral capillaries;" and on p. 39, in the section treating of retinitis of cerebral origin, it is said of advanced retinitis generally: "It is usually steatosis which predominates, but in some patients, sclerosis." It is difficult to reconcile these statements; true, we are told on p. 77, that with albuminuria there is often found a granulo-fatty alteration or steatosis of the capillaries of the brain which determines similar changes in the membranes of the eye, especially in the opticus and retina, but in a single sentence the same effect is attributed also to general tuberculosis, scrofula, alcoholism, glycosuria, leucæmia, cancerism, etc.

The first chapter is devoted to the consideration of the influence exerted by the age, constitution and health of the individual in modifying the nature and frequency of the diseases of the fundus of the eye, occurring in the course of cerebro-spinal and diathetic affections. The intra-ocular changes symptomatic of diseases of meninges, of the brain, of the spinal cord, and of the nerves, are stated to be more common and better characterized in the child than in the adult. Owing to the character of the hospital service of the author, almost all his observations have been made on children, and hence he has had opportunity to observe a large number of cases of certain cerebro-spinal diseases, while other such diseases, specially appertaining to adult life, he has seen more rarely. He admits the possibility that his belief in the greater frequency of intra-ocular lesions with cerebro-spinal disorders in children may be due to the difference in the number of his observations in each disease, but adds that there are other circumstances which throw light on the subject, and which prove that the retina and choroid are differently modified by the age, the pathogenetic conditions being in other respects the same. Very possibly this may be the fact, the statistics to prove or disprove it are still wanting. But Bouehut's method of reasoning is peculiar: the "other circumstances," so confidently relied on, are simply that certain diseases, certain diatheses are more common in children, others in adults; in other words, that the pathogenetic conditions in children and adults are different. Nor is this an unfair example of the style of argument which recurs repeatedly.

Considering the large number of cases observed, it is subject for regret

that no statistics are given. There is a list of more than forty cerebro-spinal and general affections in which the author has found optic neuritis, neuro-retinitis or choroiditis, but there is nothing with regard to the number of cases of each affection observed, nor, in figures, of the proportionate frequency of ocular lesions in any of them. Instead, it is stated, in general terms, that with cerebral tumours, provided they have reached a certain size, in hydrocephalus, in diseases of the spinal cord, in locomotor ataxia, and in chorea, if the affection be severe and of long standing, these lesions always exist; while in meningitis and cerebral softening, they are almost constant. If this is only the impression of the author, not based on exact data, the reader should be so informed, if it is supported by data they should have been given. As we have seen, not every sweeping statement made here can be accepted without question. But on whatever basis these assertions rest, there is ample evidence to show they are not absolutely correct.

A specimen of the wholesale way in which the author sometimes writes, may be found in the second chapter. "However, in the diseases which come under the head of general medicine, each lesion of the fundus of the eye allows us to affirm the existence of a like lesion in the meninges, in the brain, or in the spinal cord, and one may even sometimes, according to the eye affected, infer with some certainty which side of the brain or of the cord is the seat of the disease. Thus, hyperæmia and swelling of the optic nerve, in conjunction with nervous or cardiac disturbances, betrays hyperæmia of the brain or cord.

"Oedema of the papilla or retina, shows oedema of the meninges or hydropsy of the ventricles.

"Dilatation and varicosity of the retinal veins indicates repletion of the sinuses and meningeal veins.

"Thrombosis of the retinal veins indicates thrombosis of the venous canals of the cranium or of the meningeal veins.

"Aneurisms of the arteries of the retina indicate miliary aneurisms of the cerebral arteries.

"Spasm of the retinal arteries betrays a similar spasm of the capillary arteries of the extremities.

"The arrest of the retino-choroidal circulation indicates arrest of the cerebral circulation, *i. e.* death.

"Pneumatosis of the retinal veins indicates pneumatosis of the meningeal veins, a sign of death

"Tubercles of the choroid reveal tubercles of the meninges, or general tuberculosis.

"Steatosis of the retina indicates steatosis of the kidneys from parenchymatous nephritis, etc.

"Sclerosis of the optic nerve, or optic atrophy, indicates a partial sclerosis of the brain or the cord.

"Exudative retinitis indicates acute or chronic encephalitis.

"Leucæmic retinitis indicates general leucoeythæmia."

This speaks for itself. Let us say, however, that the descriptions given later of the intra-ocular changes, found with various cerebro-spinal or diathetic diseases, agree fairly well with the generally accepted views.

With regard to the 137 chromo-lithographs which accompany the text, perhaps the least that can be said is the best. They are certainly better than many that have been published, but they still fall far short of what

is required to make them valuable as illustrations of disease of the fundus of the eye.

Believing, as we do, in the value of medical ophthalmoseopy, we are convinced that such a work as this is better calculated to bring it into disrepute than to advance it.

O. F. W.

ART. XXII.—*On the Relation between Diabetes and Food, and its Application to the Treatment of the Disease.* By ARTHUR SCOTT DONKIN, M.D. Edin., M.D. Durham; formerly Physician to the Sunderland Infirmary and Dispensary, etc. 16mo. pp. 186. New York: G. P. Putnam's Sons, 1875.

THE writer of this little book will be remembered as the author of a work upon the skim-milk treatment of diabetes. In that publication, and in many papers in the medical journals of the last five years, he has presented several scores of cases treated in the manner indicated. Further observation and experience have confirmed his belief in the efficacy of the treatment, and wrought no very essential change in his views as to the nature of the disease.

In his first chapter, Dr. Donkin makes a vigorous attack on the views of Bernard and of Dr. Pavy, whose ideas, though not precisely identical, both imply that the disease is due to an intensification of a natural process—the formation of glycogen in the liver. The *a priori* improbability that the vastly increased secretion of a natural and useful substance, designed to nourish and to support vital heat, should at the same time be wholly and morbidly converted into a substance which the system cannot use, is forcibly shown. The writer declines, moreover, to infer that, because artificial irritation of a certain tract of nerve-matter causes a temporary appearance of sugar in the urine, therefore a chronic, progressive, and fatal disease, characterized by the persistence of saccharine urine, must be attributed to disease of the same nervous centre. Indeed, he shows us that Bernard himself has in effect admitted that his assumptions were not well founded. That such engorgement of the liver, as is implied by the theory of central nervous influence acting upon the vessels of that organ, could exist for months and leave no trace behind, seems to him incredible. Yet the liver, after death from diabetes, presents no evidence of changes such as would be expected from prolonged vasomotor paralysis. As for direct testimony to the discovery of lesions in the nervous system itself, as offered by Dr. Dickinson, the writer shows, we think, that there is entire failure to establish even a reasonable probability that the changes are causative rather than consequent. On the contrary, such degenerative processes as are described would be most likely to follow the mal-nutrition from a blood not merely loaded with sugar, but every way impoverished by a disease which is, practically, slow starvation. No autopsy, as yet, has shown the nerve-lesions in an early stage of the disease.

The idea that the disease is caused merely by the non-combustion of sugar normally formed is disproved by the fact that in many cases the excretion reaches an amount largely beyond that contained in, or deriv-

able from food naturally assimilated. Thus, a child weighing thirty-seven pounds excreted sixty-three pounds of sugar in one hundred and three days, and in one day twenty ounces.

No writer upon diabetes has failed to notice the influence of diet. How this could so immediately affect the excretion if the disease is a neurosis, is difficult to explain.

Knowing that the secretion of glycogen is one of the functions of the liver, and that this substance is capable of transformation under certain conditions into diabetic sugar, and that a certain diet will almost or quite prevent the morbid excretion, Dr. Donkin deems it only reasonable to attribute diabetes to morbid nutrition and morbid secretion in that organ. In this condition he believes the cells secrete no longer glycogen but sugar. And no matter what the food may be, the sugar is always of that particular kind. The morbid matter being easily soluble does not remain and form a diseased growth, but is taken into the bloodvessels by osmotic action, and expelled through the kidneys.

In his second chapter Dr. Donkin presents an admirable picture of the disease and its phenomena, especially in its earlier stages. The first step in the series of morbid acts whereby the liver seems to pervert the food from its nutritive functions occurs in the transformation only of saccharine and starchy food into diabetic sugar or glucose. Probably only a portion, even of this, is at first misused. It is only in the later stages that the morbid changes extend to fatty and to nitrogenous food.

As substances designed to support animal heat, and to nourish muscles and other organs, are diverted from their proper uses, malaise, failure of strength and loss of weight appear. These may at first be counterbalanced by larger supplies of food, which the usually good appetite and strong digestion enable the patient to consume. As the blood becomes loaded with sugar, an endosmotic action occurs, by which the tissues are drained of the thinner fluid which everywhere pervades them. This causes thirst, suppression of perspiration, both sensible and insensible; while it distends the vascular system and causes an excessive outpouring through the kidneys. The greater the sugar formation, the more marked become the parched mouth, the dry skin, the constipation, and the urinary flux. And, as would be expected, all the symptoms vary in intensity with the character of the food taken, as more or less convertible into sugar.

We have just referred to the endosmosis believed to occur between tissues and veins. A little reflection will indicate that Prof. Vogel and Dr. Donkin are probably correct in assuming that at times the current is the other way, giving us, as to the bloodvessels, exosmosis. For the diffused fluids, also, become saccharine and therefore dense. And so, if by the drinking of a large amount of water, the blood is temporarily made thinner and the vessels distended, the tissues would attract enough to restore equality. The kidneys then again perform their function, and there thus occurs a perpetual alternation in the transfusion of fluids between vessels and tissues. This explains the comparative slowness with which, in this disease, drinking is followed by diuresis.

There is no reason to believe that diabetic sugar is ever formed from any tissue of the body. That it might for a considerable time continue to appear during fasting, is not strange when we remember the saturation that obtains.

Dr. Donkin next passes to the more particular inquiry as to what classes of aliments are subject, or most subject, to this morbid transfor-

mation. As before stated, in mild cases, or probably in the earlier stage of all cases, only vegetable sugars and starches undergo the change. Or, at all events, the excretion does not appear in the urine when such foods are, and have been for days, strictly banished from the diet. In several cases, carefully observed by distinguished men, the amount of sugar in the urine was very exactly measured by, or proportioned to, the amount of these elements ingested. The writer believes that many if not all of the cures of diabetes, by restricted but mixed diet, have been in cases which had not passed beyond this first stage. Oftentimes, he says, this stage is very protracted, lasting, as Prout testifies, for years. The very great importance of recognizing diabetes in this its curable period, is too obvious to need more than the suggestion.

If unfortunately the disease is not recognized, there comes a time when not sugar and starch only, but albuminous and oleaginous matters begin to undergo this fatal metamorphosis. Now, the heat-making power, heretofore maintained by fats in place of the lost starch and sugar, obtains from the food no adequate pabulum. The nutrition of the muscles and of the entire system is interfered with. Emaciation, from increased destruction and diminished repair, proceeds with startling rapidity. The slight malaise of the first stage gives place to alarming nervous prostration and extreme muscular debility. The moderate thirst and hearty appetite become an unquenchable drought and an insatiable voracity. All the symptoms before noticed become intensified. The urine, voided in enormous volumes, is constantly loaded with sugar. The vital heat and the physical strength fail rapidly, and death from inanition soon ensues, *unless this fatal transformation can be arrested.*

As the patient is dying for want of nourishment, the problem is to administer a food which, resisting the morbid activity of the liver, shall make healthy blood. This food Dr. Donkin has discovered, in milk deprived of its oleaginous elements. We need not follow him in his clinical demonstrations of the reality of his discovery. It is enough to say that he here presents several new cases, mostly drawn from the experience of other physicians, showing that recovery even in advanced cases occurs when the skim-milk diet is rigidly followed.

Two or three vigorous and logical chapters are devoted to the demonstration of the facts, that fats and albuminous matters are mis-assimilated in advanced diabetic cases, and that the lactose and casein of the skim-milk do not suffer such perversion. These chapters seem to us wholly conclusive. In instance after instance, when sugar had disappeared under the chosen diet, it reappeared at once upon the ingestion of cream or meat; and as invariably again disappeared when the skim-milk formed the sole diet. In these chapters he smites his revilers and cavillers hip and thigh; showing clearly enough that no hostile champion has as yet found a crevice in his armour. Certainly no gentleman has a right to cry out that his treatment was a failure, when the essentials of that treatment were openly violated, or precautions against their violation neglected. Personal experience has shown Dr. Donkin that patients, especially in hospitals, will resort to deceit, and risk their own lives as well as the physician's reputation, in order to gratify the palate, or from belief in their own superior knowledge as to proper diet.

The nutritive principles of the skim-milk are casein and lactose. The former, or nitrogenous element, while not absolutely and in all cases in-

capable of conversion into sugar, is much less prone to such change than any other albuminous aliment. Lactose is not in the slightest degree subject to diabetic perversion. Those who, with Dr. Davy, assume that it must be injurious in diabetes, because it is itself a form of sugar, ignore its well-known and special characters. Its chemical properties and physiological relations, our author says, are widely different from diabetic sugar and other forms of glucose. It does not undergo alcoholic fermentation, but is subject to the lactic, which it goes through in the stomach in the presence of casein. That these elements really are assimilated, is indubitably proved by improved health and strength, and the disappearance of diabetic sugar, under their sole dietetic use. To call a diet containing such principles, aside from its proved efficiency, a "starvation diet," is a sneer which will injure its utterers much more than it will Dr. Donkin.

The fifth and last chapter gives careful directions for treatment. Recognizing the grave facts, that the disease has no natural tendency to recovery, and that drugs are practically useless except in treating complications, Dr. Donkin believes the only known means of arresting and curing diabetes is the strict enforcement of the diet associated with his name. He begins with four to six pints of carefully skimmed milk for the first day, which may be increased, according to circumstances, up to eight or even twelve. The latter point should not be exceeded, and if reached, one-third of the amount should be made into curds with essence of rennet. The milk is generally relished by the patient, and may be warmed if preferred, but never boiled. Relief to distressing symptoms, and increase of strength, appear almost at once. When the action is curative, the sugar disappears in from two to six weeks. When the disease has progressed too far for cure, great improvement often occurs. In a few advanced cases there is complete failure. If *no diminution* of sugar follows a week of strict treatment, no good will result.

After complete disappearance of sugar for from two to six weeks, cautious advances may be begun towards a mixed diet. For the precise steps of this progress we must refer our readers to the work itself, noting only an avoidance of fatty, starchy, and saccharine foods. Even after months or years of apparent health, bread and other starchy food should be avoided. The lactose of milk—not now necessarily skimmed—will supply the want of these. A bread made of gluten and bran, has been invented by the author to satisfy the craving for some solid of that character.

B. L. R.

ART. XXIII.—*Naval Medical Schools of France and England*. Reported to the Bureau of Medicine and Surgery. By R. C. DEAN, Medical Inspector U. S. Navy. 8vo. pp. 94, and 9 plates. Washington: Government Printing Office, 1876.

WHATEVER may be our opinion as to the value of the more commonly known "Public Documents," Americans may point to the scientific publications of the government with unalloyed pride. In the form of "Reports" of various kinds, these are constantly assuming greater im-

portance and wider value. The Smithsonian Institution, the Engineers, the Light-house Board, the Naval Observatory, the Haydon, the Wheeler, and the Powell Surveys, the Coast Survey, the Weather Bureau, etc., all are vying with each other in the production of publications which in their character and their contents are a credit to the nation. The Army Medical Department is abreast of any of those first alluded to in its scientific work. No such magnificent work as the "Medical and Surgical History of the War of the Rebellion" has ever been issued by any other government, and the "Subject Catalogue of the National Medical Library" will place the entire medical world under the deepest obligations to the U. S. Army Medical Department. With the same broad views the Naval Medical Bureau has of late made some valuable contributions to medical literature, the latest being the report of Dr. Dean. If it but bear legitimate fruit, this modest yet thoroughly excellent report will be one of the most valuable and timely publications that could have been issued. It is by comparing ourselves with others that we can best see wherein we are deficient, and we have here the fullest means for instituting the comparison.

Under date of June 19, 1874, Surg. Gen. Joseph Beale, U. S. N., directed Dr. Dean, of the European squadron, to visit "the military medical schools of the most advanced nations of Europe . . . and to collect all the information your time will allow on every point of interest connected with them." Unfortunately the exigencies of the public service not only prevented his extending the field of his observations beyond France and England, but even curtailed the time desired there. The work, so far as it extends, is so excellently well done, that we the more regret its limited scope. The method Dr. Dean adopted was not to "do" the hospital or the school, as an enterprising American so often aspires to "do" Switzerland or Rome, in the shortest possible time, but, having obtained every possible official sanction, and having availed himself of all the official information and courtesy, he placed himself on the benches, in the library, in the laboratory, in the dead room, with the students, daily walked the wards of the hospitals with them, and was an observant listener at the examinations. He has thus collected not only a valuable mass of authentic official information, but has also had the best opportunity, by constant actual work amid the details of student life, of noting the excellences and the defects of the system pursued at each school and by each nation. His report is limited to the naval medical systems of France and England, each of which he first sketches in general, and then gives details of the naval medical school at Toulon, and the naval hospitals of Toulon and St. Mandrier, and of the Royal Victoria Medical School and Hospital at Netley near Southampton. Accompanying the text are nine excellent ground-plans.

As early as 1715, M. Dupuy, at Rochefort, seeing the ignorance and inefficiency of the naval surgeons, urged the establishment of such a special school, but not until he had urged the subject five several times, and finally appealed in person to the Naval Council and the High Admiral of France, were his wishes granted. In 1720, one dark room, partly filled with invalids, was assigned for his use. In 1722, a building was erected, and the plan shows the enlarged views he entertained, for it contains practically most of the needful accommodations, both for medical school and hospital, that after 150 years of progress could now be suggested.

"So immediate and complete was its success that the minister wrote to Mr. Dupuy to express to him how much the King was gratified with his zeal for the good of the service, and with the wisdom of his views for perfecting the institution he had created. He also gave him liberty to do anything he should believe advantageous for the improvement of an establishment which His Majesty intended to favour with his particular assistance. Subsequently, Mr. Dupuy was recompensed for his long and valuable service by having conferred on him a title of nobility. . . . So acceptable were the results of the new system to the government that it was within a few years extended by the foundation of additional schools at Toulon and Brest. The former was established in 1725 and the latter in 1731; and since that time, during a period of more than a hundred years, these three schools have continued to enjoy the confidence and support of the nation under every form of government."

The old hospital buildings, now unsuitable though admirably equipped, are still in use at Toulon, but to show the appreciation of the government of the value of these institutions, Dr. Dean gives the plans of a new one now projected which is to cost \$1,000,000. Fancy such a bill before Congress for a single hospital and only for the navy!

Each school has dissecting and lecture rooms, a library which is also used as a reading room and study and for microscopical examinations, a botanical garden, a museum of natural history, pathology, and anatomy, with all the needful laboratories; and the hospital wards are used for clinical teaching. No students are admitted except after receiving their degree as "bachelor."

"The curriculum of studies is as follows: Legal and administrative medicine. Clinical medicine; medical pathology. *Materia medica* and therapeutics; toxicology. General and naval hygiene. Clinical surgery; surgical pathology. Operative surgery. Anatomy and physiology. Obstetrics, diseases of women and children. Chemistry. Pharmacy and medical physics. Natural history (medical); pharmacology. Descriptive anatomy. General pathology and semeiology. Minor surgery; apparatus and bandaging. Extemporaneous pharmacy; chemical manipulations. The annual course is divided into two sessions, one in winter and one in summer. Part of the above branches are taught in one session, and the remainder during the other. Every subject is lectured on three times a week, and every professor completes his course once in two years."

The faculty at Toulon consists of fifteen professors; and among them are four "pharmaciens," who teach chemistry and toxicology, pharmacy and medical physics, medical natural history, and extemporaneous pharmacy. It is a notable fact that the French naval druggists are thus scientifically educated by the State along with the surgeons. They also must be "bachelors of science." They form a regular corps; the "pharmacien-en-chef" ranking as a colonel; and admission and promotion is by examination as in the medical service.

At these three medical schools there are about 240 students. Of these, only about one-half ever present themselves for examination, and of this half only about one-fourth pass the final examinations, which are described quite fully. One can scarcely avoid thinking, where so many fail, that the students are not as good and as thorough as the system. Having passed this examination, they must then take their doctorate from one of the universities empowered to grant that degree.

All this tuition is free, and all the expenses incurred in obtaining the degree are reimbursed to the surgeon on his appointment; but he must engage to remain in the service at least ten years, or to repay the amount to the government.

The English Medical School for the Army, Navy, and Indian Service was not established until a few years ago. In spite of earnest endeavours on the part of medical men for half a century, no action was taken until after the Crimean War, when the inefficiency of the medical staff (due largely to the fact that the medical officers had no official status other than that of their profession) aroused public attention. Lord Herbert, the Secretary of War, and Florence Nightingale, then entered the lists; and through their efforts a commission was appointed in 1857, to inquire into the sanitary condition of the army. This commission enlarged the sphere of the medical officer from that of simply caring for the sick and wounded to the broader and more important one of the preservation of health and the prevention of disease, and made him the professional adviser not only of the sick soldier, but of the commanding officers to whose care (or lack of it) the healthy soldier was committed.

"To enable the surgeon to do this efficiently," they recommended that "an army medical school should be established, in which the specialties of military medicine and surgery, hygiene and sanitary medicine might be taught to the young medical officers of the army;" and they deemed this the *first step* to effect "an improvement in the sanitary condition of the army." In 1860, the school was established at Fort Pitt, Chatham; but, in 1863, the Royal Victoria Hospital was opened at Netley, to which the school was removed. The results were so satisfactory that, in 1872, naval officers were admitted to its benefits, and also those intending to enter Indian service. The engineers and line officers are admitted to the lectures on hygiene, if they desire.

A radical difference between this and the French schools is, that the instruction does not cover a full medical course, but is intended only for graduates in medicine who have passed the preliminary examinations, and are under appointment in one of the services. Accordingly, they have an allowance of five shillings a day, are furnished with excellent quarters in a handsome building erected for the purpose, near the hospital, furnishing a delightful parlor and a mess-room, and the strictest military discipline prevails—a method pretty sure to turn out better students and better officers than the French system. The reviewer (from a personal visit in 1866) can confirm all the favourable reports of the school given by Dr. Dean, in every particular. Dr. Dean adopted here the same practical mode of studying the details of the organization and methods of work that he had already found so successful in France. He became really, for the time being, one of the sixty students; while he messed with the officers and was given all possible official information, and such courtesies as educated English gentlemen know so well how to give.

The hospital has its special staff, but the medical school, though practically in the closest union with it, has a separate organization and a distinct faculty.

"Its affairs are directed by a senate, which is composed of the medical director-general of the army, president, the physician to the council of India, the professors of the school, and the principal medical officer of the hospital.

"The object of the school being to give practical training in such branches only as will qualify the officer for his special sphere, the course is limited to the four subjects of military medicine, military surgery, military hygiene, and pathology."

These branches are taught by the following faculty, made up of three from the army, one from the navy, and two from civil life, besides the assistants, and their names alone are a sufficient guarantee of the character of the instruction—Drs. T. Longmore (surgery), W. C. Maclean (medicine), Wm. Aitken (pathology), E. A. Parkes, since deceased (hygiene), F. DeChaumont (hygiene), and J. D. Macdonald (hygiene). Each professor has an assistant appointed for five years. The instruction is extremely practical and thorough, and consists very largely of laboratory and clinical work, only two lectures being given daily. The marking system is in force, and on the numerical standing, with the examination averages, depends the position of the assistant surgeon in his class. The examinations are three in number, the first, to ascertain if his scientific and professional education is such as in general to fit him for the service; the second, after his special course at Netley; and the third, after five years for promotion. They are conducted not by a board of officers in the same service, but by four medical men connected with the University of London. The examinations are the same for all branches of the service—a mistake as it seems to us. They cover the same branches as are embraced in the examinations for our own service, but from the character of the training received by the candidates, are far more thorough and searching. Surgeon Dean gives two sets of questions, each, in the first and second examinations, in addition to which the candidate is required to perform operations, analyses, chemical and microscopical examinations, describing and drawing the results. After looking them over with care, we can only say, "Happy the service whose officers can reasonably fulfil such requirements."

In contrasting the two systems followed in France and England, and on the most important point—the relative value of the instruction received—Dr. Dean says: "I am inclined to believe that perhaps that obtained at Netley is more directly practical, and attains in a more complete manner its special object, that of training the candidate in the actual duties of his prospective position. It is more limited in the subjects embraced, but it is well adapted to its purpose, and, like most things in England, is marked by the absence of non-essentials, by solid and substantial utility, and unostentatious thoroughness."

Dr. Dean concludes his extremely interesting report by calling attention to the fact that—

"The earliest efforts to establish schools to give special training to army and navy surgeons, both in England and in France, arose from the observation that the medical officers were but imperfectly qualified for the wide range of duties required of them in great emergencies."

And then follows the pertinent question and answer:—

"Would a similar inquiry in relation to our service reveal a like state of affairs?"

"Perhaps this is a question which every medical officer can best answer for himself, and I would not do the medical corps of the navy the injustice to affirm that it would, in a general sense. At the same time, I know no reason why the members of our service should be considered more intelligent, more devoted, or more zealous than our colleagues in England and France, and it was true of them. I, for one, am not ashamed to declare that I believe a special training in the schools of either England or France, would greatly enhance the value of my services to the Government, both in peace and war. Moreover, knowing all that I do of the three services, I deem it my duty to

say . . . that such a school would be of immense advantage to the navy of the United States, and that the absence of any such place of special training for the service is a defect that cannot be remedied too soon."

Dr. Dean's plainness is naturally tempered by his official relations and his courtesy to the members of his corps. . But we cannot fail to perceive under his modest personal allusion a deep, underlying conviction that our naval medical service (and we would add the army medical staff) is not what it *ought* to be, or what it *would* be, had we such a training school. Our medical colleges turn out annually such a host of half-educated men, that the very reasonable examinations of our army and navy boards are deemed unduly severe by comparison. Their hot-house system of succulent growth and hasty graduation, prevents any proper expansion of the course of instruction to many of the branches most needful alike to civil and to military surgeons, and especially precludes any laboratory work. The result is that, in spite of the careful weeding of the boards, a fair percentage of only moderately competent men must slip through, and even the best men have to learn by sad experience, and after many mishaps, costly alike in men and money, and effectiveness of the service, the lessons they should have known thoroughly before entering it. Most of these are technical and limited in their field of application. A professor in one of our medical schools who should enter into the hygiene of encampments, the value of the food ration, the ventilation of a ship's quarters, the means by which forced marches may be made with least injury to the soldier, the adulterations of commissary and medical stores, the mode of examining recruits, or the diseases of the torrid zone, and the means of modifying or abolishing them on shipboard, would manifestly be, in the main, wasting the time of more than nine-tenths of the class; yet to the government medical officer, these, and the like, are among the most vital questions he must meet; and on his knowledge rests not only his own standing, but the health and lives of all the officers and men under his care. Such knowledge cannot be taught in our medical schools, and ought not to be; but after the medical man has graduated, and by his general and medical education is fitted to fill such a post, then is the time to build up, on such a basis, the technical knowledge peculiar not to the profession at large, but to the especial branch he is called upon to practise.

An attempt was made, we believe, by Surgeon-General Hammond early in our late war to found such a school, but it was unfortunately abandoned. We hope it may be renewed, and renewed at once. Of all the means to elevate still further the excellent medical corps of both army and navy, and marine hospital service, this is the most important, and would be speedily the most fruitful in results. The Army Medical Museum forms a basis in the means of illustration, such as no other school in the world could equal, and both in the corps at large, and in the offices of the Surgeon-general, the men could be had who would equal the Longmores, the Aitkens, and the Barralliers, of France and England.

W. W. K.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV. — *St. Thomas's Hospital Reports*. New Series. Vol. VI. Edited by Dr. BRISTOWE, Dr. JOHN HARLEY, and Mr. WAGSTAFFE. 8vo. pp. xiv., 355. London: J. & A. Churchill, 1875.

IN presenting to our readers an analysis of the contents of the sixth volume of the new series of Reports issued by the staff of St. Thomas' Hospital, we shall, in accordance with our custom, group together and notice the more important medical papers, and afterward those pertaining to surgery.

The opening article by Dr. THOMAS B. PEACOCK, *On Rheumatic Carditis*, covers an experience of twenty-six years, and is intended to supplement two reports upon the same subject, one published in the *Transactions of the Clinical Society*, vol. i., the other in the *St. Thomas's Reports*. In his experience of 233 cases of rheumatism, 39.05 per cent. had this complication; a percentage rather below that given by most authorities. He summarizes as follows: The occurrence of this affection is limited to cases of fibrous rheumatism, seldom occurring in the subacute, syphilitic, and gonorrheal forms. It is influenced by the character of the epidemic, varying as do pneumonia, typhoid fever, erysipelas, etc., in their epidemic forms. It is seen both in mild and severe cases, but more frequently in the latter. It is an early complication, and most frequent where there have been antecedent attacks. It occurs mostly in the young, the weak, and debilitated.

Pericarditis was detected in 15.45 per cent. of the cases. The only invariable symptom of a cardiac complication seems to be the rise in temperature, but this sign is also rendered uncertain by the fact that any inflammatory complication, as pneumonia or pleurisy, will be followed by the same.

Dr. Peacock speaks at length of the value of the "tension sound" as an indication of commencing involvement of the pericardium. However interesting such a distinction may be, we cannot help adverting to the fact that in the early stage acute pericarditis and endocarditis are so closely allied in symptoms as to make it almost impossible, and, we may say, unimportant to disconnect them, their treatment at that period being the same. To those who are interested in this subject we recommend highly this article. We regret that our limits prevent a more thorough discussion of its valuable points.

An article by Dr. BERNAYS, *On the Working of the Sale of Food and Drugs Act of 1872*, is very satisfactory reading. Most of it is devoted to the subject of the adulteration of milk, in which water plays the most important part. We quote a portion that seems interesting: "There is a very common opinion that the low specific gravity of a fluid is often occasioned by frequent dipping. Now the contrary is the case, but as this opinion has been constantly advanced in police courts, it may seem well to give it a decided contradiction."

Dr. HENRY GERVIS gives us an excellent article on *Puerperal Fever*, based upon sixteen cases with death and five with recovery. "But will the presence of septicæmia account for all the various symptoms we have found to prevail in our cases of puerperal fever? I think so."

The doctor believes that there is nothing specific in puerperal septicæmia; that the vaginal or uterine surface is the starting point of the malady, and consequently the treatment he recommends is based accordingly. This article is thoroughly and carefully written, and, were there not as many equally forcible arguments on the other side of the question, it would be conclusive.

Dr. RHYE WILLIAMS contributes a short paper *On some Cases of Sudden Recovery from Mental Disease*, to refute the statement in a recent psychological work, "that, though recoveries from mental disease are sometimes rapid, they are perhaps never sudden." He gives notes of three cases, females, exhibiting many features of hysteria, though the first had well-marked suicidal tendencies. The line of demarcation between functional insanity, hypochondriasis, and hysteria seems to us to be a mere geometrical one, and this paper certainly does not add breadth nor thickness to it.

An excellent and valuable thesis by Dr. F. CHARLEWOOD TURNER on the *Function of the Vessels in Relation to the Circulation of the Blood*, gives much food for thought, and carries us into many of the most important subjects for discussion, of the day. This paper, which is a very long and complete one, brings out the following conclusions: that, reasoning from analogy as well as from direct experiment, the Hunterian theory, as regards the influence excited by the bloodvessels themselves on the movement of the blood they transmit, holds its own; that there appear to be no valid objections to the view that the circulation is aided by rhythmical contraction of the vessel walls, promoted by the influence of motor fibres of the sympathetic system.

Dr. JOHN HARLEY reports the favourable *Use of Belladonna in Enteric Fever* as a sedative to the cerebro-spinal system and direct vaso-motor stimulant. He used the succus belladonnæ of the English Pharmacopœia, in ℥xv. doses repeated every four or six hours. Twenty-eight cases form the basis of his paper. Its action on the heart seems to be tonic, diminishing the pulse-rate and the temperature. Prolonging its use after the pyrexial stage brought on "irritable debility" of the heart, increasing the "usual consequences of prolonged fever."

Dr. HARLEY also contributes an article *On Solanum Dulcamara*, in which he states that after careful administration of its most reliable preparations (decoctions and infusions of the dried young branches of the plant), no evidence was obtained of the solubility of the active principles in water, bearing out the statement made by other investigators. The volume is concluded with the *Medical Report* of the hospital, which comprises a total of 1197 cases treated during the year 1874.

J. M. K.

The surgical papers in this number of the reports while quite numerous are for the most part very short. In accordance with the usage of this Journal, the attention of the reader is asked to them grouped together for convenience.

Mr. GEORGE RAINY, Demonstrator of Anatomy, furnishes the first article with which surgeons will be interested, *On the Structure and Function of the Thymus Gland*. The researches of this gentleman lead him to believe that the so-called cavity of the thymus body is in reality filled with a gelatiniform material, which is permeated with capillaries, and that this centre of the gland possesses a structure identical with that of the Peyerian follicles, which, as is well known, are regarded by many as lymphatics. That free communication exists between the thymus body and the lungs *via* the bronchial glands, Mr. Rainy thinks he has demonstrated, and reasoning from these facts and some other observations he infers that, as the lungs at birth consist of undeveloped air-cells, surrounded by a gelatinous blastema apparently taking on fatty de-

generation, while the thymus contains precisely similar material, therefore the function of the thymus gland or body is to receive this blastema by absorption. The supply being soon exhausted from the complete development of the lung tissues, the thymus begins to degenerate, and disappears, thus sharing the fate of all unused organs.

Two Surgical Cases of Interest are contributed by NELSON C. DOBSON, F.R.C.S., Surgeon to the Bristol General Hospital, etc.; and from their rarity are well worthy of analysis. This is especially so with the first case, which was one of tumour of the soft palate occurring in the person of a Welsh woman twenty-two years old. The patient when fourteen years of age noticed a little lump below the left ear which continued to grow slowly until a few months before Mr. Dobson was consulted, from which time it increased more rapidly. At the time the case first came under notice, behind the left ramus of the jaw there was a little tumour, which was evidently connected with a large growth situated within the soft palate, pretty much filling up the pharynx, covered entirely with mucous membrane, but without adhesions to it. The operation required seemed of such magnitude that it was deemed best to decline its performance until the patient had fully consulted her friends. After nine months' absence the case reappeared, and Mr. Dobson proceeded to remove the growth. First pushing the tumour firmly against the skin, an external incision, parallel to the ramus of the jaw, was made down to the growth, and some points of adhesion between it and the styloid process, and other parts, broken up by the finger, until the posterior portion of the tumour was found to be entirely free; then an incision was made into the soft palate and the tumour freed in front without further cutting. The mass, now lying entirely loose, was then delivered through the mouth, barely passing between the jaws on account of its size. Smart bleeding occurred at first, but it soon stopped, so that no ligatures were required, and the patient made a good and uninterrupted recovery. The disease proved to be a fibro-adenoma. Mr. Dobson thinks the operation could have been as well accomplished without the external incision, but made it at the suggestion of one of his colleagues as a precautionary measure, in case severe hemorrhage should occur.

The second case recorded by this author was one of dentigerous cyst expanding the right lower jaw. It was very large, and after some fruitless palliative treatment the maxilla of that side from the second bicuspid to the condyle was removed, and an excellent recovery ensued. An unerupted wisdom tooth was found to be the cause of the mischief. The paper is illustrated by handsome coloured lithographs of both cases, which make the condition of things more plain than we have succeeded in doing by a mere verbal description.

W. W. WAGSTAFFE, F.R.C.S., Assistant Surgeon and Lecturer on Anatomy, under the heading of *An Unusual Form of Fracture of the Fibula* narrates two cases, in each of which there was "a vertical fracture" of that bone "in its lower end, with a displacement of the fractured portion in such a way that it was twisted round on its long axis." In both cases the fractures were produced by twisting the feet, and not from direct violence, and in each a projecting edge of bone could be distinctly felt under the skin between the tibia and fibula, close to the joint. In the first case it was found impossible to reduce the displacement, and at the expiration of a month, the parts being firmly united in their deformed position, the patient, though walking with difficulty, was discharged at his own request. The second case occurred a few months after the first, and presented the same features. The sufferer was drunk when admitted, and becoming very restless and noisy, half a drachm of tincture of opium was administered to him, shortly after which he became quiet. Having passed a comfort-

able night, the patient enjoyed a good breakfast, and then fell into a comatose condition and died thirteen hours after admission. Upon examination it was found, that, in addition to a transverse fracture two inches above the malleolus, there was a piece of the fibula broken off longitudinally, which involved one-third of the breadth of the bone, and was so twisted upon itself that its upper end rested upon the tibia, which displacement it was found practicable to reduce by manipulation. The sudden death of this patient, in the opinion of Mr. Wagstaffe, can only be accounted for by the beginning of fatty degeneration, both of liver and kidneys, revealed at the autopsy, which conditions are well known to be sometimes very intolerant of opium.

On an Osteoplastic Operation for removing Naso-pharyngeal Growths, by WILLIAM MCCORMAC, F.R.C.S., Surgeon to and Lecturer on Surgery at St. Thomas's Hospital, is the next surgical paper, recording a case in which Mr. McCormac, by the operation of Chassaignac and Von Bruns, removed a villous growth from the pharynx and posterior nares. This method consists in making an incision entirely through the soft parts, from the middle line of the bridge of the nose, around the ala, into the nostril; the nasal bone and the nasal process of the superior maxillary are then divided with a fine saw, and the flap thus formed turned back to the opposite side of the face. These steps having been taken, free access was obtained to the growth, and it was easily removed. The hemorrhage was very free, and only controlled by the use of the aetnal cautery. Three weeks later the same operation was done upon the opposite side of the face, and some remains of the tumour were removed. The patient, a young woman, made a good recovery; and the unpleasant deformity, occasioned by the dilatation of the nostrils, was found to be materially improved.

The next paper is from the pen of S. OSBORN, Surgical Registrar, and is entitled *Cystic and Dermoid Tumours of the Eye*. In the opinion of Mr. Osborn, these tumours occasionally originate in dilatation of some "obliterated remains of the ocular cleft." It is difficult to understand what obliterated remains are, or how, if entities, they can be the basis of anything; but the author's language has been literally transcribed, that the reader may try his hand at the puzzle. Some cases are referred to by Mr. Osborn, as confirmatory of his views, and some of the arguments brought forward which have induced him to oppose the opinions of Mr. Bowman and others.

Anatomical Variations, by W. W. WAGSTAFFE, F.R.C.S., and ROBERT W. REID, M.D., is the title of a paper containing many instances of muscular anomalies, with some few variations of vessels and fasciæ observed in the dissecting-room during the six years preceeding the issue of this volume of reports. It is clearly written, quite profusely illustrated by wood-cuts, and will be found interesting by the practical anatomist.

In a paper *On some Cases of Bleeders*. Mr. MACCORMAC narrates some additional instances of the hemorrhagic diathesis, which have come under the notice of himself and his colleagues of late. The term bleeder can hardly be regarded as either scientific or elegant; and in former years, when "bleeding and leeching" were pursued as a trade, might have led to some misconception, and a portion of the community might have thought they were treated of as abnormal; but now that phlebotomy is taking place among the lost arts, it may make no difference. The article, while containing nothing new, is an addition to the literature of a subject always possessing interest for surgeons.

Closely allied to the foregoing, both in substance and position, is a paper *On severe Hemorrhage after Teeth Extraction*, by W. G. RANGER, Assistant Dental Surgeon. While referring to the hemorrhagic diathesis, Mr. Ranger

directs attention especially to those cases where, after the extraction of a tooth, the fang is found to possess an unusually large apical foramen, which he thinks may be looked upon as indicative of an equally large artery of supply. In these cases, severe hemorrhage, generally primary, sometimes secondary, may be anticipated. Mr. Ranger gives some cases, and recommends the appropriate treatment, of which the most important consists in plugging the alveolar cavity; his favourite styptic being matieo. In cases where, from the presence of the hemorrhagic diathesis, there is a tendency to the extension of the bleeding surface over the gum, he advises the taking of an impression of the jaw in plaster of Paris, and allowing the plaster to remain in contact with the jaw for twenty-four hours.

On Harelip, by FRANCIS MASON, F.R.C.S., appears to be a lecture upon the subject well calculated to inform students, but containing little that will appear novel to the practising surgeon. Mr. Mason thinks that where the bones are involved, the cleft always takes the place of a lateral incisor, which is invariably absent. While disclaiming any belief in the influence of maternal impressions, some cases are cited by Mr. Mason, which he regards in the light of very remarkable coincidences. The article is full, very clearly written, and fully illustrated, being altogether an admirable *resumé* of our knowledge of the subject, and the resources at our command. Though somewhat didactic for a volume of hospital reports, it can well be commended to any one desirous of refreshing his memory concerning the matters of which it treats.

New Ophthalmic Instruments, by H. LIEBREICH, contains illustrations and descriptions of a new eye speculum, which can be kept open without a spring; a lachrymal knife, with a probe at one end; a chalazion forceps, in which the ring and plate work like the blades of scissors; and a pocket instrument case. This last is a miracle of compactness, and with its contents most of the operations upon the eye and its appendages can be done.

The only remaining surgical paper is the *Surgical Report for 1874*, by SAMUEL OSBORN, Surgical Registrar, which is full and of much interest, but too statistical in its nature to admit of analysis in the limits of this notice.

S. A.

ART. XXV.—*Handbuch der gesammten Augenheilkunde*. Redigirt von Prof. GRÄFE in Halle, und Prof. SÄMISCH in Bonn. Band VII. Erste Hälfte, Capital XIII. Leipzig, 1876.

Beziehungen der Allgemein-Leiden und Organ-Erkrankungen zur Veränderungen und Krankheiten des Sehorgans. Von Prof. FÖRSTER, in Breslau.
The Relations of General Diseases and Diseases of other Organs to the Alterations and Diseases in the Organ of Vision. By Prof. FÖRSTER, of Breslau.

THE extent of our knowledge respecting the relations which exist between diseases of other portions of the body and the eye, is to be found in various essays scattered through our periodical literature, and, to a limited extent, in the text-books on ophthalmology. The treatise before us—a part of the great German encyclopedia of ophthalmology—is the first attempt to bring this knowledge together in a connected manner, and for this reason, if for no other, it is deserving of attentive consideration.

Prof. Förster has divided his work into nine sections:—

I. The relations of diseases of the respiratory and circulatory organs to the organ of vision.

II. Those of the digestive apparatus.

III. Those of the urinary apparatus.

IV. Those of the sexual organs.

V. Those of the nervous system.

VI. Those of the skin.

VII. Rheumatism and gout.

VIII. Acute and chronic infectious diseases.

IX. Some constitutional diseases and general disturbances of nutrition.

Lack of space will prevent our noticing in full all these sections. We can only glance at some, giving most attention to those which have not hitherto been brought so prominently forward.

In Section I. he says that "the anomalies and diseased processes in the eye, which accompany diseases of the respiratory and circulatory organs, are to be considered according, 1, as to whether the alterations are due to morbid processes *propagated from the respiratory mucous membrane to the conjunctiva*; or, 2, whether they are the expression of *venous congestion* brought about by obstruction of the capillary circulation; or, 3, whether they are the results of an *increase or diminution* of the tension of the arterial system; or, 4, whether they give the evidence of a *general disease of the walls of the vessels*; or, 5, whether they are due to *clots (emboli)* carried forward from the heart or large vessels to remain fixed in the arteries of the eye; or, 6, whether they are the manifestations of a disease extensively diffused throughout the organism—the *miliary-tuberculosis*, which, although not a disease belonging exclusively to the respiratory apparatus, yet by right finds its consideration here."

In Section II. the diseases of the digestive apparatus are considered in their connection with visual troubles, and these he classes as follows: 1. Those due to reflex action. 2. Those due to alteration in the blood-constituents dependent upon serious lesion of the organs of digestion. 3. Those determinations to the brain and eye in consequence of chronic digestive troubles, be it through deranged function of the liver or the mucous membrane of the digestive tract (*Plethora abdominalis*).

In the first paragraph are considered those troubles that have their origin in *carious teeth*. These may manifest themselves in a number of ways—atrophy of the optic nerve, troubles of the retina, and sometimes an amaurosis without any sign manifest by means of the ophthalmoscope. An injection of the conjunctiva is a common accompaniment of neuralgia of the trigeminals. But the most marked concomitant is, perhaps, the *limitation of the range of accommodation*. The labours of Schmidt (*Archiv für Oph.* xiv. 1, p. 107), on this subject, are given in more or less detail. The result of an examination of 92 cases of diseased teeth was that, 1. In consequence of pathological irritation of the dental branch of the *trigeminus*, more or less considerable limitation in the range of accommodation shows itself. 2. This limitation may be one- or double-sided; in the first instance the limitation is confined to the afflicted side. 3. This limitation is found more frequently in young persons; it is seldom or never observed in advanced life. 4. It is explained by the increase of intraocular pressure which proceeds from a reflex irritation of the vaso-motor nerves.

In the second paragraph the instances of eye disease, principally troubles in the retina and nerve, which occur in connection with hæmatemesis, are duly considered.

The influence of *hepatic hyperæmia* (the so-called *plethora abdominalis*), which is met with in free livers and drinkers, has never, according to the author, received any extended attention. For this reason we shall quote pretty freely from that paragraph.

"The patients afflicted in this way complain frequently of pain and uneasiness in the head, and appear red in the face; after a hearty meal they have a sense of fulness in the abdomen; they breathe with difficulty; the heart's action is accelerated; there is fatty accumulation in the abdomen, mostly in the omentum; the bowels are somewhat retarded. On the part of the eye, they complain of all of those symptoms which pertain to a rapid exhaustion of the muscle of accommodation—restriction of the range of accommodation. Smarting sensations and a feeling of tension in the forehead or behind the eyes, as well as in the occiput, are experienced when the eyes are used for only a short time for reading or near work. The previously assisting convex glasses no longer suffice, and stronger lenses, on account of the diminished range of accommodation [which, in the 40th year, should amount to from $\frac{1}{3}$ to $\frac{1}{4}$, but which now is reduced to $\frac{1}{6}$ or $\frac{1}{5}$], are found convenient. Their working-power is therefore impaired. A few days of abstinence usually relieve these patients."

In these patients, too, says the author, it is not infrequent to find an equatorial turbidity of the lens before the age of 50. Under the use of the Karlsbad waters, however, he has seen this opacity often remain stationary for ten or fifteen years, and he has no doubt that frequently it may diminish. This result he deems due, not to any special action of the waters on the lens trouble, but simply to the impression they make on the general system. He mentions also in this connection an interesting case of diplopia (the rectus superior being the muscle affected), which occurred in the person of a very free-living man who was also troubled with hæmorrhoids, which was relieved by leeches applied to the anus. In the course of ten years it recurred five or six times, and on each occasion the application of the leeches was followed by the same happy effect.

In Section III. are considered the diseases of urinary organs which are accompanied by disturbance in the visual apparatus. Among these, of course, *albuminuria* receives due consideration, but the subject is so fully discussed in the text-books that we shall pass it by to consider

Section IV., where are treated of, at considerable length, those visual troubles which are associated with diseases of the sexual apparatus. Under this head he treats of a trouble in vision that he has found connected with *chronic parametritis*, of which little or no mention is made in the present text-books on ophthalmology or gynæcology. To this trouble he gives the name of *kopiopia hysterica*, and its pathology he considers to be a reflex hyperæsthesia of the fifth pair and the optic nerve; the disturbing cause being in the richly nervous cellular tissue surrounding the uterus (the *parametrium*). The eye symptoms he has given in very great detail.

The complaints of the patients are in many instances similar to those individuals who suffer from muscular or accommodative asthenopia. The great difference, however, between these and the subjects of *kopiopia hysterica* is that while the former complain of indistinctness of vision, the latter do not; the source of their trouble being in *painful sensations* of various kinds and *photophobia*.

"The sensations of pain are seated around the eyeball, in the region of the retro-tarsal fold, or in the ball itself, or even behind it or in the forehead, more seldom in the nasal or jaw bones. They are drawing or bending, dull pressing, but seldom boring. Very frequently will there be a feeling as of a wound in the retro-tarsal fold or of a burning or biting on the surface of the eyeball or the edges of the lids; sometimes as of a troublesome pressure, a feeling as of a foreign body, a little hair, in the conjunctival sac. These sensations are often increased by work—reading, sewing, etc., and by bright light; yet often they will come on without any straining of the eyes and continue many hours, frequently throughout the entire day with but little diminution of their intensity. They experience, further, an exaggeration of these symptoms through all mental

and physical depressing causes; bodily fatigue, tedious, long-continued or very loud conversation, anger, much wine, etc. They are mitigated, however, by comfortable rest, sleep, pleasant surroundings, travel, etc. The pain is not that typical of supra-orbital neuralgia in which free intervals of more or less regular twenty-four hours' duration alternate with painful exacerbations, and there is nearly always lacking any point sensitive to pressure. The pain of this reflex hyperæsthesia is also entirely distinct from that of the so-called ciliary neurosis, which is met with in keratitis with loss of substance in the cornea, iritis, and inflammatory glaucoma, and which in character is very similar to supra-orbital neuralgia. . . . Though the pain is often described by these patients as 'frightful,' yet they are never so carried away with it as to cause them to groan or to have no mind for other things. There is no injection of the conjunctiva, no swelling of the lids, no increased flow of tears, no external evidence whatever of the intensity of the pain, which are so common in neuralgia of the trigeminus. Moreover, we cannot look for any heroic suppression of pain in those patients, since they lack in a high degree the power of self-command."

A rigid examination of the parts fails to show any local manifestations as a cause or a result of the pain. It is purely and simply reflex in its character.

But the hyperæsthesia is not confined to the branches of the fifth pair, it shows itself also in the optic nerve, as manifest in the photophobia which is almost always present.

"It is not so much a general bright illumination which is complained of, as certain kinds of light. They almost always complain that the lamp-light is much more disagreeable to them than daylight, although the latter is infinitely more intense. They are much less incommoded by a light, cloudy day, and even by the sunshine, than by a lamplight in a dark chamber. During the day they get on well enough without their blue glasses, but in the evening when the lamp is placed upon the table, they cannot endure the white table-cloth; it must be substituted by some dark material, or at least by a newspaper. The white bed coverings, the brass foot of the lamp, the ground glass globe, all give rise to pain, and must be removed; the lamp must be placed high upon the mantle, so that the room remains in a twilight as it were, or the patients go into an adjoining dark room and participate in the evening's entertainment only from a distance.

"I think that this peculiar intolerance of light, which moreover is never associated with lachrymation, is to be referred to an intolerance of the contrasts of light in the field of vision, which by artificial light is usually much more marked than by daylight. That the artificial light also possesses a special quality, which is irritating to such eyes, is also unquestionable.

"Further worthy of notice is the frequent alteration in the complaints of the patients. There are 'good days' and 'bad days,' without any show of regularity as to their appearance. During the 'good days' they are almost entirely free from pain, bear the light better and can read for hours without inconvenience: during the 'bad days,' on the other hand, all the characteristic symptoms are present, and that too when the eyes are in no manner strained. Almost never does the pain interfere with sleep, and the patients are never awakened during the night on account of pain. If, from any other cause, they are awakened, the only inconvenience they experience is at most a dryness of the eyes and a slight feeling of pressure in them. Immediately after awakening patients get on very well for one or more hours until, through their business or the influence of the day's commotion, fatigue and a general relaxation set in and with them the pain. It may be that the horizontal position has an influence in the production of the nocturnal remission aside from the absence of external impressions.

"Just before and during the menstrual menses, the symptoms usually set in with greater intensity."

The acuteness of vision is generally *not materially altered*.

This complex of symptoms, which the author groups under the name of

kopiopia hysterica, is the "prerogative" of the female sex, though the author has seen a few analogous cases in men, but in all there was some affection of the genitalia. It affects, by preference, sterile women, and statistically is most common between the ages of twenty and thirty.

According to the author's experience, there are about eight or ten cases in every thousand eye patients.

The general condition of the patients was such as is commonly found in hysterical subjects, though the more violent symptoms were usually wanting. A full exposition of the pathological condition of the uterine appendages found in connection with this *kopiopia*, by Prof. Freund, is given, and we are sorry that want of space prevents our making extracts from it.

The author is also inclined to refer that group of phenomena known under the name of "Basedow's Disease," to derangement of the sexual system. In support of this opinion he points to the fact that it is much more common in women than in men, and to the prominence of the eyes and swelling of the thyroid gland which has been frequently observed at the menstrual epoch. He also gives the details of a case of exophthalmic goitre, which made its appearance suddenly in a man soon after he had been under continued sexual excitement for some time in attempting coitus with a virgin.

In Section V. we have a consideration of the diseases of the nervous system in their relations to affections of the eye. This is a field that has been pretty thoroughly worked over, and as the section under consideration contains nothing especially new, we shall pass it by.

In looking over the remaining sections we find many things that would be of interest and profit both to the general practitioner and ophthalmologist, but the length to which this notice has already grown precludes the possibility of our extracting them. We have given enough, however, we trust, to convey an idea of the character of the treatise, and of the manner in which Prof. Förster has handled a subject which every day is assuming more and more importance.

S. M. B.

ART. XXVI.—*Contributions to Reparative Surgery: Showing its Applications to the Treatment of Deformities, produced by Destructive Disease or injury; Congenital Defects from arrest or excess of Development; and Cicatricial Contractions from Burns.* By GURDON BUCK, M.D. Illustrated by numerous engravings. 8vo. pp. 237. New York: D. Appleton & Co., 1876.

In this little work of less than 250 pages, modestly entitled, "Contributions to Reparative Surgery," the distinguished author has briefly yet clearly laid down certain rules for the guidance of the surgeon in the preparation of parts, the closure of gaps, and modelling of flaps; the due observance of which cannot but be followed by gratifying results: and in the reported 29 cases, he has shown what admirable effects can be produced by properly devised and skilfully executed plastic operations. In the chapter on the transplantation of skin attention is strongly called to the existing necessity that the skin selected be in a normal and healthy condition; experience conclusively establishing "the fact that cicatricial integument cannot be relied upon for that purpose." That the skin flaps may be of proper shape and size, it is recommended to make an exact pattern from oiled silk laid upon the surface to be covered in, and allow at least one line for shrinkage; on the forehead, special care should

be taken not to wound or detach the pericranium. Evidently the author is not an admirer of that form of rhinoplastic operation, in which through the lower part of the flap the periosteum is detached and turned down to develop substitute nasal bones.

Three methods of transferring the skin have been employed by Dr. Buek: 1, by approximation; 2, by sliding; 3, by transfer from a distance; "the choice of them depending upon the conditions of the parts involved." To the raw surfaces left to heal by granulation, a so-called collodion crust is recommended to be applied, the surface being coated first with a uniform layer of scraped lint, and then with an additional layer of lint saturated with collodion, such artificial scab adhering "for from six to ten days, when it becomes detached by suppuration."

Three kinds of sutures are recommended: 1. The interrupted thread suture, inserted preferably by trocar-pointed needles; thread being regarded as fully as good in all respects as metallic sutures. 2. The pin or figure-of-eight suture, the pin being introduced by the author's "suture pin condensor" and wound with loosely twisted cotton yarn, to be removed within, at most, forty-eight hours, and the pin itself on the fourth day. 3. The beaded-wire clamp suture; small glass beads being placed on the silver wire, and brought up firmly against the skin; the advantages claimed for this being, that "it relieves the other sutures of all strain, and admits of being tightened or slackened, if necessary."

For "the reconstruction of the mouth after the entire loss of either the upper or lower lip, or of a considerable portion of either," two operations are described, each of which is regarded as possessing certain very positive "advantages over other methods in use among surgeons." For the full understanding of these, the author's own account, illustrated by his drawings, must be consulted, as no brief abstract can render them intelligible.

About four-fifths of the volume is devoted to the report of 29 cases of plastic operations rendered necessary by deformities "arranged under three classes: 1, loss of parts involving the face and resulting from destructive disease or injury; 2, congenital defects from excess or arrest of development; 3, cicatricial contractions from burns." About one-half of these cases "have previously appeared in print," some of them in the pages of this Journal.

Ten of the 29 cases belong to the first class, and prove at once how careful, painstaking, and skilful is the surgeon, and how great deformity may by "reparative surgery" be met and remedied.

Another series of cases, ten in number, serves to illustrate the author's treatment of hare-lip, and the report is preceded by a few clear and very satisfactory remarks upon the "preparation of the parts for readjustment." The operative procedure consists, in brief, in free detachment of the mucous membrane, the cutting off of a narrow flap on each side, by aid of a Beer's cornea knife; the turning down of these flaps to form the much desired central projection of the lip border, the breaking down and proper placing or removal, as the case may require, of any existing intermaxillary projection; and the securing of the denuded surfaces in apposition by the use of pin and thread sutures, one pin being "inserted close to the vermilion border below, and another close to the columna nasi above."

In a reported case of congenital hypertrophy of the tongue, in which two operations were made, in the second of these, the size of the organ was reduced by removing a wedge-shaped portion by lateral transfixion, a method of operating which the author regards as "obviously the one to be preferred," and states his reasons therefor.

The history and treatment of four cases of "cicatricial contractions follow-

ing burns," are given in full, and no other cases in the book testify more strongly to the combined skill and carefulness of the operator. Thorough freeing of the affected parts and their maintenance in proper position during the period of repair, are strongly insisted upon, and attention is called to the necessity of constantly keeping down the exuberant granulations, by the use of either nitrate of silver thoroughly and deeply applied, or the eustic potassa (the latter being only occasionally required), either or both aided by compression by adhesive straps. In one of the cases (No. 28) in which both face and hand were involved, six operations were made, the time of treatment extending over a year and a quarter.

The work contains a large number of illustrations, and they really illustrate the text, which cannot be said of those found in very many of our books; Most of the principal figures, we are told in the preface, were executed by Froning in Vienna. The only regret we have in reading the book is that its author had not written a complete treatise on "plastic surgery." From no other of our surgeons would such a work be more gladly welcomed by the profession. At any rate it is to be hoped that we will have more "contributions."

P. S. C.

ART. XXVII.—*The Tonic Treatment of Syphilis.* By E. L. KEYES, A.M., M.D., Adjunct Professor of Surgery, and Professor of Dermatology in the Bellevue Hospital Medical College; Surgeon to the Bellevue Hospital; Consulting Surgeon to the Charity Hospital; Consulting Dermatologist to the Bellevue Bureau of Out-Door Relief, etc. 8vo. pp. 83. New York: D. Appleton & Co., 1877.

Our readers may remember that in the January number for the year 1876, of the *American Journal of the Medical Sciences*, Dr. Keyes published the result of his observation upon syphilitic blood. By means of an ingenious apparatus, in numerous carefully conducted experiments, he counted the red corpuscles of the human blood, in health, and in syphilis. As the result of these analyses he found that in full health in the male there are about 5,000,000 red blood-corpuscles to the cubic mm. In ordinary cases in the city the average he puts at about 4,500,000. Syphilis, he states, diminishes in a marked degree the number of red corpuscles. The effect of mercury, however, in increasing the number of red corpuscles in syphilis is very decided, thus "Mercury in small doses for a short or long period in syphilis, alone or with the iodide of potassium, increases the number of red corpuscles in the blood, and maintains a high standard of the same." In small doses mercury acts as a tonic, to healthy animals, and also to individuals not syphilitic, augmenting the number of the red globules.

This power of mercury to increase the number of red corpuscles is the foundation of Dr. Keyes' tonic treatment, which he has so carefully elaborated in the pages before us, and which consists in the use of very small doses of mercury continued for a very long period of time. The iodides he uses, only in selected cases, when he advises that they should be pushed unsparingly. As to the curability of syphilis, our author says: "My experience leads me to state that syphilis in private practice is a very manageable disease; that a patient rarely has more than the full general eruption (the first) during which his treatment was commenced. The subsequent lesions are of a trifling character for the most part, and tertiary symptoms are very rare. I rarely see

iritis, and not often any appreciable loss of the hair. Mucous patches about the mouth and tongue, and throat symptoms, are often obstinate, and their duration protracted. I am now in the habit of keeping patients two and a half or three years or more under treatment continuously, and then I see them marry and produce healthy children. The bad cases of syphilis I meet have generally been over-treated or under-treated early in the disease, and have not pursued a regular, systematic, continued course."

In Chapter Second, Dr. Keyes furnishes us with the details of his treatment. As this must last at least two years, it must "not be undertaken lightly," and the diagnosis of syphilis must first be thoroughly established. This done to the surgeon's satisfaction, or the early eruption having appeared, or induration of the post-cervical or epitrochlear glands having developed, then treatment in earnest must commence. Any of the preparations of mercury he tells us may be used, but that which he prefers is the French granules, containing one centigramme of the protiodide. If this cannot be obtained, one-sixth of a grain of the protiodide, or one-half of a grain of blue mass, may be used in pill form, and if the patient be anæmic, they may be combined with iron and extract of gentian. When the patient cannot take pills he advises the bichloride in one-forty-eighth of a grain dose combined with the compound tincture of cinchona. The different doses of the drug, our author describes under the terms "full dose," "tonic dose," and "reserve dose." The full dose is thus arrived at: the patient begins with the minimum amount as above stated, and gradually increases the number of his pills at each taking, until positive symptoms of intestinal disturbance are evident, or until the gums begin to be slightly touched. Beyond this dose he cannot go without aid from opiates, or damage to health, and here is the full dose. This can only be arrived at by experiment, and varies with different patients.

When the full dose has been ascertained, and the active symptoms have subsided, the patient's dose is reduced one-half, "and this half dose, which will act as a tonic (I call it the tonic dose), is to be continued unceasingly day after day, month after month, waiting for new symptoms. Should such symptoms appear—(there may be none whatever, except throat and mouth lesions) the half dose held in reserve (I call it the 'reserve dose') may be at once added to the 'tonic dose,' and the 'full dose' continued until the symptoms yield, after which the 'tonic dose' is to be again resumed, or, as in the first instance, the aid of inunction or the mercurial vapour bath may be invoked to assist the 'tonic dose' and dissipate the symptom."

Such, Dr. Keyes tells us, is the essence of the general treatment, each case, however, demanding its own special study; and while such prolonged exhibition of mercury is advocated, positive salivation is most strongly deprecated. The duration of the treatment is fixed at at least two or two and a half years, and often three or more, the author adding that he does not feel that "justice has been done the patient until at least two good years of treatment lie behind him, and at least six months of entire exemption from any symptoms due to syphilis—even the mucous patch." In the pages following the general treatment, valuable directions are given as to the employment of inunction, the mercurial vapour bath, and the treatment of salivation. Then follows a chapter on the preparations of iodine and their use in syphilis. As tonics he believes them to be useful in any stage of syphilis (p. 50), but not more so than other tonics less irritating to the stomach. In the late secondaries the preparations of iodine, "used along with mercury (mixed treatment), greatly enhance the value of the latter, sometimes even outrank it in power." In the mixed treatment, which is more suitable for the chronic troubles, of intermediate and late syphilis, the

mercurial may be exhibited by innunction, or by fumigation, while the iodide is taken by the stomach, or both substances may be conjoined by the same prescription.

The pages devoted to the quantity of iodide which may be required, are well written and instructive, and we most heartily coincide with the author's earnest sentences: "No means in the physician's hands place him so near the Deity as the iodide of potassium. With it, in well-selected syphilitic cases, he can sometimes almost effect a resurrection—wasted and lost functions are restored; the mind, the memory, the speech, the hearing, the sight, the taste, the touch, all may be recovered by its aid." To effect such restorations, however, the drug must be boldly pushed.

Chapter Third is occupied with the local treatment of syphilis, and the special means adapted to special lesions. Into all this we have not time to go, and we feel that in the brief limits of a book notice we cannot do justice to our author and his views. We would rather recommend such of our readers as are interested in the study of syphilis, to procure this modest little book of Dr. Keyes. It will well repay them. It is not a full and theoretical treatise on syphilis—it does not profess so to be. It is rather the expression of the author's own convictions as to its treatment, and conveys in terse and forcible phrase, the conclusions to which its writer has arrived; conclusions based upon actual clinical experience. It is essentially a practical book, and its pages abound in formulæ, well suited not only for the general treatment of syphilis, but also for the various local lesions of the disease. It is in truth a most valuable work for the physician's table, and one which can be consulted with confidence. We therefore cordially bring it to the notice of the profession, and feel assured that it will enhance the already enviable reputation of its author.

J. H. B.

ART. XXVIII.—*On Tracheotomy, especially in Relation to Diseases of the Larynx and Trachea.* By W. PUGIN THORNTON, Surgeon to the Hospital for Diseases of the Throat, and to the St. Marylebone General Infirmary. 8vo. pp. 70. Philadelphia: Lindsay and Blakiston, 1876.

THIS elegant little brochure is a type of those really valuable additions made to surgical literature of late years. The product of men who have enjoyed exceptional advantages in their connection with special hospitals; they show a thorough, practical acquaintance with the subjects of which they treat, dealing with them simply, and in a way which is particularly attractive to the general reader.

Mr. Thornton writes only of tracheotomy proper, regarding laryngotomy and laryngo-tracheotomy as objectionable in the great majority of cases, from the injurious effect exerted upon the cartilages of the larynx, when it is necessary to continue the use of the tube for a length of time.

Of late years, and with the introduction of the laryngoscope into general use, the operation of opening the trachea has, in great measure, ceased to be one of last resort, the mere catching at a straw, as it so often was, and has taken its place among those resources of surgery, which, based upon accuracy of diagnosis, attain results not reached of old. With the aid of the laryngoscope, not only can the character of the disease be determined, but the best time for the performance of the operation can be selected, and a prognosis more decidedly given.

Mr. Thornton never uses an anæsthetic in doing a tracheotomy, as he finds that simply freezing the cutaneous tissues by the ether spray, sufficiently diminishes the pain of the incisions, and for the additional reason that he looks upon the aid of the patient in coughing up any blood which enters the trachea as of great importance. After a succinct account of the anatomy of the parts involved in the operation, Mr. Thornton passes on to an enumeration of the instruments which may be required for its performance in any case, whether simple or complex. These are divided into, 1, cutting; 2, accessory; 3, special; 4, tubes. The right-angled tube of Mr. Durham, with an adapted blunt-pointed trocar, to facilitate its introduction, is the one endorsed by Mr. Thornton as preferable to all others, and with one of its four sizes, he thinks any case can be suited. All other forms of canulæ, and the special dilators, of which there are very many, are condemned by our author as either useless, or dangerous.

The author's method of operating is given in some detail, but it does not differ materially from that adopted by most surgeons. A good light is of the highest importance, and after the first incisions through the skin, the dissection can be most safely finished with the handle of the scalpel. Unless suffocation appears to be imminent, the trachea should not be opened until all hemorrhage has ceased, as, in Mr. Thornton's experience, the establishment of respiration is by no means certain to insure its arrest. While the steps of the operation are clearly and minutely detailed, due, and by no means unnecessary stress, is laid upon the importance of the after-treatment, and the gravity of the responsibility resting upon the nurse. In all cases, and without exception, surgical aid should be near at hand for the first forty-eight hours succeeding the operation. The use of steam to create moistness of atmosphere, is stated to be entirely unnecessary, if care is taken to have the room properly warmed and the patient protected from draughts. This last advice is not only good for tracheotomy, but for every surgical proceeding or operation. Special danger may result from, 1, slowness of operating; 2, fixing the head too far back; 3, passage of blood down into the air-passages; 4, inability to pass the canula; 5, entrance of air into the veins. The means best suited to avert these mishaps, and the methods of dealing with them, should the danger arise, are specifically dwelt upon.

The remainder of the book is taken up with the consideration of the injuries and diseases requiring tracheotomy. Operations undertaken for the relief of croup and diphtheria give the least satisfactory results. Chronic laryngitis always needs the operation ultimately, and by a resort to it, it is reasonable to expect that life will be prolonged for from one to two years. In Mr. Thornton's own experience, chronic laryngitis, next to syphilitic disease, has been the most frequent affection requiring the operation. In this portion of the pamphlet, for in bulk it is nothing more, will be found concise practical suggestions, with the views of the author modestly, yet decidedly stated. Reference, at greater or less length, is made to all the conditions for which this operation has been recommended. While two cases are quoted in which tracheotomy apparently exerted a favourable influence upon epilepsy, the suggestion of Marshall Hall for its employment in that disease, is consigned to oblivion, as in opposition to the views of modern surgery.

The book has an appendix, is nicely gotten up, and illustrated with numerous wood-cuts and several photographs. While containing so much that is of positive value, it is singularly unostentatious in style. Avoiding theories, Mr. Thornton speaks by his own knowledge. In consequence of this singleness of aim manifested, the inquiring reader is not confused by a multiplicity of conflicting views, so often given only to be controverted. In conclusion, it may be

said that the surgeon or physician who consults this book will, under any circumstances, find at least one way pointed out for his guidance, and will act safely in adopting its suggestions. S. A.

ART. XXIX.—*Studies, chiefly Clinical, in the Non-emetic use of Ipecacuanha; with a Contribution to the Therapeutics of Cholera.* By ALFRED A. WOODHULL, M.D., Asst. Surg. and Brevet Lieut.-Col. U. S. A. 8vo. pp. 155. Philadelphia: J. B. Lippincott & Co., 1876.

THE very modest and unpretending preface to this little volume tells us that the views stated have been the offspring of the author's regular professional experience. In citing cases, however, he has not confined himself to his own records. No pretension is made to an elaborate or exhaustive treatment of the properties of the drug. The writer simply states the lessons which he himself has learned.

The generalized views which Dr. Woodhull has come to hold, are, especially, the following: That the early prominence and constant exercise given to the emetic action of ipecacuanha have hindered the appreciation of its other properties; that it is a direct nervous stimulant, acting chiefly, if not entirely, on the sympathetic system.

The arrangement of the matter is admirably clear and logical. In Part First, under the heading of Clinical Facts, is presented a condensed statement of what has been thought, advised, and recorded by different writers in different lands, concerning the use of ipecac. Each disease or abnormal condition for which the drug has been given with apparent benefit, is handled by itself in a separate, numbered section, with illustrative cases in which the particular malady was treated by the remedy in question. A score of complaints and some ninety cases are here presented.

In Part Second, entitled Therapeutical Opinions, the author first shows, by quotations from the standard works on therapeutics, the general disposition to overlook other than emetic action of this remedy, and to convey the impression that its influence is rather sedative or depressant, than tonic or stimulant, as he believes it to be. In a short sub-section he shows the somewhat feeble and variant attempts of medical writers to explain the long-acknowledged benefits which follow the use of ipecac in dysentery.

In two or three pages upon the neurotic action of the drug, the writer explains what he means and implies in speaking of nervous stimulation and depression. He has no design to discuss or to assume any particular theory as to the nature of nerve-force, nor to commit himself to nice distinctions concerning its exercise. When he speaks of ipecac as a nervous stimulant, he means to imply that it strengthens and supports the action, especially, of the sympathetic system and its dependents, the vaso-motor nerves. That vomiting is not of necessity a manifestation of depression, he thinks is a fact too little borne in mind.

Dr. Woodhull next discusses briefly the Nature of Dysentery. The idea of inflammation has received, he believes, an undue and misleading prominence. Inflammatory action is strictly and wholly secondary. Why the profound nerve-depression—or "ganglionic intoxication"—should make its local manifestation in the colon and rectum rather than elsewhere, we do not know. Our readers will probably agree with the author in regarding the disease as eminently one of depressed vitality, calling for support and stimulation. And

we think his reasoning leaves little doubt that it begins in the nervous system. Afterwards, when the capillaries, deprived of their tonic contractility, dilate and allow the blood to stagnate, come the irritation, congestion, and the whole train of symptoms in the lower bowel.

The author now proceeds to take up the diseases previously enumerated and illustrated, in order to point out the mode of operation of the remedy in the successive maladies and cases presented. In this examination he assumes the truth of his hypothesis, that *ipecacuanha* is a nervous stimulant. As would be anticipated, dysentery is here again first considered. Scarcely one of the host of writers who have admitted the efficacy of *ipecac* in this disease has been led to perceive that its action is that of a stimulant. Mr. Docker, in the *Lancet* in 1858, is the only authority found by our author who seemed to perceive the true character of the influence exerted. This paper, however, was unknown to Dr. Woodhull until after his own views were formed and expressed.

Passing from one disease to another, the writer shows how the action of the remedy is explainable upon his hypothesis, and exhibits the unsuccessful efforts of other authors to account for the results upon other theories. He does not seem to be carried away by preconceived notions, but meets difficulties with candour, and is not afraid to say so when he cannot overcome them. In some few instances he suggests the use of the remedy almost solely from theoretical grounds, having little or no experience to confirm them. But these instances are openly acknowledged, and can mislead no one. And at times, it seems to us that his suggestions are original and valuable. The proposal to try *ipecac* in cases of malarial hæmaturia is worthy of attention. The general impression left on the mind by this portion of the work is, not only that the action of *ipecacuanha* has not been fully understood, but that its field of usefulness has been much underrated. Dr. Woodhull has noticed and pointed out facts and inferences which, once brought under our eyes, are so plain that we are inclined to feel as if we really knew all about them long ago. In saying this we certainly do not intend disparagement; perhaps, we are giving the highest praise.

The reader is cautioned as to the existence of much impure or false *ipecac*, and also as to the effect of the patient's imagination when the name of the drug is known to him.

It may be proper to state that the doses contemplated by the writer, in many cases, are not the minute amounts recommended by some for alterative purposes. For dysentery he prescribes and procures the toleration of ten- or twenty-grain doses. A preliminary dose of ten or fifteen minims of laudanum he does not believe to be essential, though sometimes useful. Taking the medicine on an empty stomach, with very little liquid, assuming and retaining for some hours the recumbent posture, and applying a mild external irritant over the epigastrium, will generally secure retention. It is not necessary in all diseases, however, to give doses large enough to require these precautions. Thus, while dysentery and uterine hemorrhage call for the large doses, the vomiting of pregnancy and excessive sweating are successfully treated by much smaller quantities.

Many of the author's cases are very striking. For dysentery it would almost seem that the *ipecac* treatment was infallible—and that too in a very short time.

A Third Part of this work is devoted to a Speculation upon Cholera. In this essay he argues, from the known usefulness of *ipecac* in cholera morbus, cholera infantum, dysentery, colliquative sweats, malaria, and from the proba-

bility that it acts through the sympathetic nervous system, constringing the distended capillaries, that, consequently, it should be effective in Asiatic cholera. When the drug has been given in this complaint, it has generally or always been either in very minute doses, or as an emetic. Given as the author uses it in dysentery, it would be well worthy of a fair trial in epidemic cholera.

We hope this vigorous effort to reinstate in its proper place a most valuable remedy may be successful. "Give a dog a bad name," says the proverb. Ipecuene has become in the popular language only a synonym for vomiting, which exercise has never enjoyed with the ignoble vulgar the general favour accorded to purging. And physicians have to some extent allowed themselves to forget that it has other than emetic properties. To these, and to all, we heartily commend this book.

B. L. R.

ART. XXX.—*Principles of Human Physiology.* By WILLIAM B. CARPENTER, M.D., F.R.S., F.G.S., F.L.S., Registrar to the University of London, etc. etc. Edited by HENRY POWER, M.B. London, F.R.C.S., Examiner in Natural Sciences, University of Oxford, and in Natural Sciences and in Medicine, University of Cambridge; Late Lecturer on Physiology at the Westminster Hospital, etc. A New American, from the Eighth Revised and Enlarged English Edition, with Notes and Additions by FRANCIS G. SMITH, M.D., Professor of Institutes of Medicine in the University of Pennsylvania, etc. 8vo. pp. 1083. Philadelphia: Henry C. Lea, 1876.

THE profession of the United States needs no introduction to Dr. Carpenter's *Principles of Human Physiology*. For more than a third of a century it has been the physiological bible to a large denomination of medical students.

It is rare indeed that the profession has offered it a text-book, which has passed through the mental crucibles of three men as distinguished in their specialty as Drs. Carpenter, Power, and Smith: either name alone being a sufficient guarantee for the scientific honesty and thoroughness of the work.

Since the appearance of the first edition in 1842, Dr. Carpenter's work has steadily maintained its standing as a thorough and complete epitome of the state of physiological thought; and now that it has reached its eighth edition may safely be considered to have escaped the shoals and quicksands of criticism, and deserves to be ranked among the few medical classics.

This rank has only been maintained by frequent revisions; representing as it does a department of medicine, the details of which have been almost revolutionized within the past quarter of a century, it is now scarcely recognized as the same book save by its title and a few characteristic features.

Time, however, has dealt leniently with Dr. Carpenter's work, and although it has grown old, it is by no means in its dotage; in harmony with the renewal of the human organism which it describes, under the able editorship of Mr. Power, the worn-out, effete portions have been removed, and new life-giving material supplied, until it now reflects as fully the progress of physiology as any other work which can be placed in the hands of the student.

But this process has been attended with some disadvantages. Mr. Power, who also edited the previous English edition, deserves the highest praise for the manner in which he has engrafted the results of modern researches upon the parent stem; but the large number of these grafts and the exceedingly abundant and detailed references to original sources increase the bulk of the volume beyond normal limits. Either the pruning knife must be more liberally

used in future editions, or the work must be allowed to grow and develop into what it now almost is, an encyclopædia of physiology.

The English editor seems to have arrived at the same conclusion, since in his preface we find the following suggestion, which we heartily endorse:—

"In future editions, which will be superintended by other hands, the extension of physiological knowledge will probably render necessary a subdivision of the work into two or more volumes, one of which will deal with minute anatomy, another with pure physiology, and perhaps a third with the relations of physiology to pathology."

One of the distinctive features, and probably one of the elements of the popularity of Dr. Carpenter's treatise, may be found in the practical application of the principles of physiology to pathology and therapeutics. The editor has done well in retaining, with appropriate alterations, those sections that especially bear on the relations between physiology and pathology.

A book is always welcome in proportion as it meets a want on the part of the profession. Judged by this standard, Prof. Smith and the American publisher may well be congratulated upon this edition. An American edition of Dr. Carpenter's Physiology has long been needed. The last one, also edited by Prof. Smith, was published in 1855—over twenty-one years ago—since which several English editions have appeared, and the time had come when, if the work before us would not be considered obsolete and banished from American schools, a thoroughly revised edition was absolutely necessary.

Twenty-one years! When one recalls the wonderful activity in the collateral sciences which are the handmaids of physiology, the application of the developments in the physical sciences to the solution of vital problems, the remarkable development in both normal and pathological histology and histo-chemistry, the great improvements in the construction of instruments, and the introduction of new methods of investigation, he is readily convinced that the present edition as compared with that of 1855 is almost a new work. Almost every page bears testimony to this fact. We find one whole chapter expunged, and the following new ones introduced: Chapter I. giving a short but excellent *resumé* of "Life and its Conditions." Chapter III., "On the Minute Anatomy of the Connective Tissues, Cells, and their Derivatives," and Chapter IV. on the "Chemical Composition of the Body."

Based as is the present American edition upon the eighth English, which only appeared in Nov. 1875, there has been little other than clerical work reserved for the American editor. However, at various places the text has been enriched by commentaries which serve to render it more clear or to record some new fact. Especially is this true in the really excellent chapter which treats of "Food and the Digestive Process." The connection of the American editor with the case of Alexis St. Martin, from which case dates our positive knowledge of stomach digestion, enables him to speak with authority.

Dr. Smith here states that recent experiments made under his direction confirm his previously-expressed opinion that lactic acid is the free acid of the gastric juice. The English editor, in summing up, writes:—

"It appears then to be a reasonable conclusion that whilst hydrochloric acid is originally poured forth, and is therefore the acid obtained by those experimenters who have employed mechanical irritation to the empty stomach; other acids, as the lactic, butyric, or even acetic, may be formed during digestion, and may thus have been obtained by those who have examined the contents of the stomach only during or towards the close of that process. Allowance must also be made for differences existing in different animals, and perhaps also at different ages, since M. Wasmann has remarked that the pepsin of the stomach of the pig is entirely destitute of the power to coagulate

milk, although the pepsin of the stomach of the calf possesses it in a very high degree."

In speaking of the kinds of food upon which the gastric juice is capable of exercising its peculiar solvent properties, we read:—

"All the more recent and accurate experiments of those who have studied the chemistry of digestion, lead to the conclusion that the solvent powers of the gastric juice are chiefly exerted upon *azotized* substances: and that its action is comparatively slight upon starchy, saccharine, and oleaginous matters. Although the change in the starchy particles, which commences in the mouth, is usually continued in the stomach, yet its continuance is essentially dependent upon the presence of the salivary fluid; being materially checked when, by tying the œsophagus, that fluid is prevented from passing into the stomach. Its conversion into dextrin and sugar is completed in the small intestine by the action of the gastric juice."

Upon which Dr. Smith very wisely comments as follows:—

"The experiments by the American editor upon Alexis' St. Martin confirm the statements here made as to the office of the gastric juice in digesting albuminous articles of food, by a previous conversion into albuminose or peptones. So also that gastric juice has no action upon oleaginous food, other than to liberate the oil by dissolving away the albuminous envelopes of the fat-vesicles. With regard to amylaceous articles of food; these experiments upon St. Martin, as well as others more recently performed, through the kindness of Dr. E. Brown-Séquard, who, it will be remembered, has the faculty of vomiting at will, showed distinctly the presence of grape-sugar in the products of gastric digestion as determined by Trommer's test; and this in much larger quantity than could be obtained by the action of saliva for the same length of time upon a portion of the same arrowroot swallowed by Brown-Séquard, and which had been previously tested for glucose without the response usual when this substance is present. That the glucose thus found in the products of gastric digestion is the result of the action of the gastric juice upon the amylaceous food, is not contended for. The change has been most probably produced by the action of the mucus secreted by the mucous follicles of the stomach, as it is well known that mucus from any of the mucous membranes has this effect. Thus an injection of starch in the rectum, when evacuated, is found to respond to Trommer's test for grape-sugar."

The blood in its twofold office of steward and scavenger conveys to the different tissues the elements necessary for healthy nutrition and removes the various products of destructive metamorphoses. It therefore contains, at one time, both the elements of life and the products of death. The blood then, as Prof. Hermann philosophically says, may be considered as the natural centre in the exposition of the chemical changes which occur in the body. An intimate acquaintance with the physiology of the blood is therefore essential to the student, and in the examination of a new treatise on physiology, we instinctively turn to the chapter on the blood.

Chapter VII., extending over ninety-one pages, is devoted to the discussion of the blood, its physical, chemical, and structural qualities, and its relations to the living organism. The subject is exceptionally well treated. We may enumerate the sections treating of the Colouring Matters, and the Pneumatology of the Blood as especially full and interesting.

In speaking of the composition of hæmoglobin it is stated that "the percentage composition of hæmoglobin obtained from Schmidt's and Hoppe-Seyler's analysis is C 54.0, H 7.25, N 16.25, Iron 0.42, S 0.63, O 21.45;" the reader is then referred to the foot-note which reads: "According to the recent researches of M.M. Paquelin and Jolly (*Séance de l'Académie des Sciences*, 19th Oct. 1874) the corpuscles of the blood contain the iron in the form of tribasic phosphate of the protoxide, but the pure colouring matter (their hæma-

tosin) contains no iron." Hæmatosin is generally considered to be a derivative of hæmoglobin and not a proximate principle of the vital fluid.

The discussion of the pneumatology of the blood incorporates all of the later investigations of Preyer, Mathieu and D'Urbain, Bëstor and St. Pierre, and Hermann; and is much fuller than in any text-book with which we are familiar.

We are glad to see retained the section on alterations in the compositions of the blood in disease, which, though legitimately belonging to pathology, finds here an appropriate place.

We may refer the reader to page 269, for an interesting statement, too lengthy to be inserted in this notice, which sets forth the late researches of Obermeier, Nedvetski, Oepveu, Hiller, Losterfer, and others on the spores, germs, and entozoa found in the blood, which fairly indicates a line of thought destined to result in great benefit to practical medicine.

We should like to have seen introduced a fuller chemical analysis of the blood. True, the inherent difficulties in making such an analysis are so great that we can only hope to arrive at a proximately correct one; yet some of the later analyses are much more satisfactory than the one here given. Recent observations certainly show that the organic constituents of the plasma are more complex than the old division into albumen and fibrine would indicate.

In our judgment, Denis' theory of the albuminous constituents of the blood, since it has been adopted as probably correct by many of our ablest physiologists, deserves a more prominent insertion than five lines in a foot note.

In Chapters XIII., XIV., and XVII., which take up more than one-fourth of the whole volume, we have a very interesting and thorough discussion of the nervous system and its appendages, forming one of the most valuable and instructive portions of the book. Had we not already exceeded the space allotted to us, it would be a profitable and pleasant task to go through these chapters seriatim, and point out the many evidences which they offer of careful revision upon the part of the editors. We find here a detailed account of the histology of the nerve centres and sensory organs, embracing the latest developments in this department. Prof. Meynert's observations on the structure of the brain, taken from the elaborate article in Stricker's Manual of Histology, are very fully and very correctly outlined.

Fechner's psycho-physical law for the measurement of the various sensations, "that within certain limits sensation increases as the logarithms of the stimulus: in other words, sensations increase as the logarithms, whilst the excitations increase as ordinary members," is described clearly and at considerable length.

We also meet here the most satisfactory summary, which we are now able to recall, of the very latest experiments of Fritsch and Hitzig, Ferrier, and others, on the localization of functions in the brain. We learn from the preface that the editor has not only witnessed many of the experiments of Dr. Ferrier, but has also had the advantage of his assistance in the preparation of this section. We notice, further, introduced into the text, a full summary of the results arrived at by the Committee of the New York Society of Neurology and Electrology, and published in the *New York Medical Journal* for March, 1875. No allusion is made, however, to Prof. Bartholow's experiments on the human brain, published in this Journal for April, 1874. This section, devoted to the experimental evidence of the general functions of the cerebrum, with numerous references to experiments made and papers published late in 1875 well merits the careful attention of the profession.

From what we have already said, it will be evident that the work of revision

has been most conscientiously performed, and that the present edition is thoroughly *en rapport* with the most advanced physiological thought.

From a careful examination, we are convinced that Carpenter's Principles of Human Physiology will long maintain its place in the front rank of physiological text-books.

The American publisher deserves credit for the manner in which he has performed his portion of the work; the American edition, both in dress and size, being more neat and convenient than the English edition. W. J. C.

ART. XXXI.—*Clinical Studies, illustrated by Cases observed in Hospital and Private Practice.* By Sir JOHN ROSE CORMACK, K.B., F.R.S.E., M.D. Edin., M.D. Paris, Chevalier of the Legion of Honour, Physician to the Hertford British Hospital of Paris, etc. etc. 2 vols. 12mo. pp. 547, 579. Philadelphia: Lindsay & Blakiston, 1876.

THESE two volumes contain various medical monographs from the pen of the author that appeared from time to time during the last forty-two years, either as distinct treatises or as contributions to medical journals; together with a few that do not appear to have been previously published. These monographs, being based upon clinical reports of cases, are of considerable historical value as references, although many of them belong to an age in medicine when therapeutical treatment varied very much from that of the present day. By additions and emendations, however, much that appeared at an early day has been brought up to the teachings of the present time.

As it will be impossible to review at length a work of such versatile character, we will simply notice some of the more interesting or important subjects which have been treated by the author.

"Puerperal Convulsions." Dr. Cormack gives the credit of having first discovered the connection between puerperal convulsions and albuminuria to Dr. John Lever, who published an article upon the subject in *Guy's Hosp. Reports* for October, 1843. Dr. Cormack remarks in reference to the origin of puerperal eclampsia (page 413): "The convulsions result from direct toxicological action on the nervous centres, produced by poisonous substances which the unembarrassed kidney could throw off, but which the congested kidney cannot excrete. In pregnant women, blood-poisoning exists far more commonly than is generally believed. There is a series of phenomena resulting from different degrees of toxæmia, such as nausea, vomiting, coma, delirium, convulsions, and mania."

Sir James Y. Simpson remarked, after the appearance of Dr. Lever's paper, "that he had been accustomed to teach in his lectures that patients attacked with puerperal convulsions had almost invariably albuminous urine, and some accompanying or rather preceding dropsical complications, and hence probably granular renal disease"—a pathological condition that more recent investigations show to be a rare complication; the condition of the organ being one simply of mechanical congestion in the great majority of cases. Hence the greater frequency of eclampsia in robust primiparæ, with unyielding abdominal parietes and a plethoric condition of the system. The paper of Dr. Cormack, although written twenty-seven years ago, shows a very clear understanding of the nature and origin of convulsions in pregnant women, as we regard them to-day. In treatment we have made some advances, especially in the use of

new remedies for the control of the spasmodic movements; but it is believed by many that venesection has been too much abandoned as a means of cure.

"Granular Degeneration of the Kidney, and its relation to Scrofula." The author rejects the term "Bright's Disease" as too vague in its application, this title being used to indicate other conditions than that of true granular degeneration, to which it should have been restricted. The article is illustrated by the report of a case of sudden death in a boy of 12, with the post-mortem appearances. In this case, vomiting was the first evidence of ill-health, a condition we have repeatedly noticed. Convulsions next occurred, and death followed in three hours from the first act of vomiting.

There is at times in this disease a peculiar type of vomiting that the reviewer has not observed in any other malady. In one patient, perfect quiet relieved the disposition to emesis, but the moment the man spoke, he was seized with the inclination to vomit, and emptied his stomach with a force that indicated a sudden and spasmodic contraction of that viscus. This condition continued several days, with occasional attacks of convulsions ending in coma; then entire mental restoration, and finally a terminal convulsion, coma, and death. In another patient, a lady, affected with sciatica, followed by rheumatism in the left lower extremity, our attention was directed to her kidneys from the fact, that any movement of the body brought on a sense of nausea, frequently followed by vomiting. The rheumatic affection subsided several days before her death, which was by coma without convulsions. On several occasions in visiting the first patient, we found him move suddenly to the side of the bed and vomit most violently directly upon answering our first inquiry as to his condition. The muscular movement of the chest, and action of the lungs, appeared to produce a reflex excitement in the muscles of the stomach and abdomen through the nervous system, ending in sudden contraction, just as this condition is sometimes excited by the sight or smell of disgusting objects, especially in delicate subjects.

"Infantile Remittent Fever:" case terminating in hydrocephalus; death preceded by convulsions. Kidneys congested, urea and uric acid in the blood.

"Value of the Dark Abdominal Line as a sign of recent delivery." A few lines from vol. i. page 489, will suffice to show the value of this sign. "I have, in every case in which I looked for it, observed in the recently delivered a dark abdominal line or stripe extending between the pubis and umbilicus, and commonly going up to the ensiform cartilage, but, unfortunately for the value of this appearance as a medico-legal test, I have discovered that it often manifests itself in males, and in females independently of delivery."

"Hernia of the Uterus," 4 cases gravid, and 2 unimpregnated. The gravid subjects were all delivered by incision, with a saving of two women and the four children.

"Reflex Convulsions of Infancy." Case in which a child was restored from a state of apparent death by the hypodermic injection of morphia, 1874. Five cases of glotto-laryngeal spasm, or spasmodic croup, 1875 (not before published).

"Treatment of the Paralytic Affections of Diphtheria and other diseases; with remarks on their Pathogenesis and characteristics" (not before published). The diseases enumerated as resulting in paralysis, besides diphtheria, are relapsing fever, cholera, dysentery, and smallpox.

"Non-Venereal Discharges from the Genito-Urinary Organs of both Sexes." 8 cases, viz., urethritis and vaginitis from cold and damp. Vaginitis attributed to contagion of matter of ophthalmia. Purulent discharge from urethra of young boys, and do, in male adults, from infection by menstruous women.

"Chronic Poisoning by Chloroform." This article is based upon a remark-

able ease, in which the patient was saved from apparent death, by inversion of her body upon several occasions during syncope from cerebral anæmia. Query. Would not nitrite of amyl, or the one-tenth dilution of nitro-glycerine, have answered, associated with artificial respiration as in this case?

"Successful Resection of the Shoulder-joint in a case of Gunshot Wound." Dr. Cormack strongly advocates the use of opium after severe injuries requiring operation, as a calmative; the effect to be kept up for several days.

"Concussions of the Brain" (not before published). This article is founded upon 2 cases, one of a boy of fifteen years and a half, injured in Paris, by a fall; and the other of his father, 42 years old, struck in the head by a bottle. Boy recovered in four months; man, after partial recovery, became subject to headaches, and died suddenly eight months afterwards, from abscess of the brain.

We have thus presented, as briefly as possible, a record of the chief subject-matter of the two volumes before us, embracing quite a variety of topics, and covering a long and active medical experience. These essays show the author to have been a close observer in disease, and a very clear reasoner upon the medical questions involved in his writings. The work will make one of valuable reference upon the subjects embraced by it, many of which have been treated at considerable length.

R. P. H.

ART. XXXII.—*A Directory for the Dissection of the Human Body.* By JOHN CLELAND, M.D., F.R.S. 8vo. pp. vii., 186. Philada.: H. C. Lea, 1877.

THE title of this book has the merit of denoting exactly its object. As expressed in the preface, it is to guide the student "in his dissections, both that he may make them in such a manner as to display the anatomy to the greatest advantage, and that he may recognize the structure by the names by which they are known." It describes, therefore, solely the methods of the dissection. Accordingly it omits all anatomical description and has no illustrations whatever. It has also the virtue of thoroughness if not of novelty. Beginning with the method of using the usual "instruments," the author next passes to the "order of dissection." He advises the assignment (as is usual in Scotland) of two dissectors to the head and neck, the thorax, and the abdomen, and one or two to each of the limbs, making at least ten students to each subject. In our American medical schools this would be deemed undue crowding, to say nothing of the inconvenience from want of uniformity in the hours of attendance and in the diligence of so large a number. Careful and minute directions are then given for the dissection of each region, and the author is not satisfied with the cursory dissections too often made, but carries them down to the articulations and to the examination of the deeper and more difficult parts, e. g., the ganglia of the sympathetic, the base of the cranium, the orbit, the internal ear, and the posterior abdominal wall. Would that our future medical men could be persuaded, while they have the golden opportunity, to follow him *ad finem*.

But while appreciating and endorsing the methods and the object of the book, we cannot help thinking that it will fail of its mark. It does not meet the needs of the student. He needs, especially in his first dissections, an appeal to the eye by faithful representations of the parts dissected that he may readily recognize them and a description of their appearance, attachments, relations, and purposes, that he may use the knowledge others have gained and make it his own, to which he can also add any personal observations. Incorporated

into a good "Dissector's Manual" (which usually has the gist of the author's directions) it would be of great value, but dissevered from the additional aid such a book gives, we fear it will scarcely gain the favour its inherent merits deserve. Its greatest value will be to advanced students and to graduates who wish to renew their anatomical studies.

W. W. K.

ART. XXXIII.—*How to Use a Galvanic Battery in Medicine and Surgery.*

A Discourse upon Electro-Therapeutics, delivered before the Hunterian Society, upon November 8, 1876. By HERBERT TIBBITS, M.D., F.R.C.P. Edin., Hon. Med. Sup't of National Hospital for Paralyzed and Epileptic, etc. 8vo. pp. 56. London: J. & A. Churchill, 1877.

DR. TIBBITS is well and favourably known to the profession in this country through his *Hand-Book of Medical Electricity*, and we are glad to have from his pen the little book before us, which, as will be seen from the title, consists of a lecture published at the request "of several who heard it delivered."

As the name implies, the object is to tell how to use a battery and to give, in a small space, practical information on electro-therapeutics. The matter is so much condensed, however, that it is not altogether satisfactory, for one feels at every page a desire for a fuller account of the subjects considered.

A good many of the pages are taken up with a description of the "Tibbits batteries," "the Voltaic," "the induction," and the "combined" battery; one of the peculiarities of the first, and, indeed, of all of the forms of batteries consists in the substitution of the Leclanché cell for the Smec or Bunsen element. There are some advantages in this cell in a portable battery, for as Dr. Tibbits says, there is no need for any arrangement to remove the elements from the cells when the battery is not in use, and there is not the same danger of damage to the battery should it overturn, but there is very little trouble in raising and lowering the cells in a Stührer battery, and there is absolutely no waste of the elements in any of these batteries when not in action; while in the Leclanché cell, although the wear of the elements may be slow, still, in time, it is considerable, and is going on always whether the battery be in use or not. Besides, in all of the Leclanché cells that we have seen, there has been a running over of chloride of zinc on the outside of the cells, and this must be a disadvantage when they are in a box.

The current selector is very ingeniously arranged so that the operator can choose the cells beginning at either end of the series, and in this way avoid using the one portion of the cells more than another. The Faradic apparatus has no means of making a slow interruption, and this, we think, is indispensable for an office battery. One thing that particularly pleases us about the induction battery is that the author has only the secondary coil connected with the electrodes. We almost exclusively use the secondary current, and could never see the use of the four and six current batteries that are so loudly vaunted by their makers.

The method of applying electricity is given, but too briefly, only a few lines being devoted to direct muscular electrization, and no reference is made to the use of the "motor points" in the application.

The electro-therapeutics of several diseases is given, and comparatively large space is devoted to Infantile Paralysis, as the author is desirous of showing how much good can be done for this affection by electricity. Electrolysis and the

galvano-cautery are dealt with in the remaining pages. A description is given of the author's cautery battery, but it is to be regretted that he does not give the size of the apparatus and the work that it is capable of performing.

The brochure will certainly be found useful by many busy practitioners, and we would recommend such to buy it, for it contains many valuable and practical hints.

W. S.

ART. XXXIV.—*The Electrical Bath; its Medical Uses, Effects, and Appliances.* By GEORGE M. SCHWEIG, M.D., Member of the New York County Medical Society, etc. 16mo. pp. 134. New York: G. P. Putnam's Sons, 1877.

WE well remember having seen in the pages of a contemporary, a couple of years ago, a paper by Dr. Schweig, on "some of the uses of the electric bath," and were struck with the circumstance that, although the author claimed that his method was new, there was absolutely no intimation given as to how the treatment was applied. We had anxiously waited for some further information, and had hoped that this communication from the author might place within our reach the plan, which, according to the above-mentioned paper, had wrought some wondrous cures. The book before us, however, while claiming in the preface to "present to the profession all that is necessary to a full comprehension of the electro-balneological treatment," does not teach anything in regard to the actual application of the author's method.

Minute details are given as to the construction of the bath-tub, the kind of wood to be used, number of coats of paint, etc., and even as to the manner of placing a carbon electrode at each end of the tub. But how is the application to be made? We may be stupid, but we cannot find out. We cannot discover if the patient is to be in contact with the foot or head electrode, or with both, or neither, and it seems as if this were an important point to know. Then as to the strength of the electrical current employed in the baths, we are told that batteries vary so much in strength that it is impossible to express this in figures. But surely the batteries manufactured by the Galvano-Faradic Co. are so well known that if it were said that a current from so many inches of the primary or secondary coil of one of these instruments were used, we would have some idea of the strength.

The author refers to using in the baths as an adjuvant to treatment certain chemical substances. Some of these are to be used with a view of their being absorbed by the body, and others are to aid in eliminating metallic poisons from the body. We are not told if there is any difference in the method if one or the other end is desired, but to us that is of small importance, for we must acknowledge to having but little faith in the absorption of iron, iodide of potassium, or *extract of malt* by the skin through the agency of electricity. The above substances are what Dr. Schweig says he has used. If these substances are taken up by the system in the above manner, why not demonstrate it by experiment? If iodide of potassium is absorbed it will be eliminated by the urine, and can be there detected. In the use of a salt of iron we should think it as likely that metallic iron would be electrolyzed on the surface of the person as to be absorbed, and imagine a patient emerging from his bath in a coat of mail! A number of pages are devoted to the "physiological effects" of the electrical bath, but as the author states that he has had the opportunity of observing its effects on but few healthy persons, the observations as *physio-*

logical are not important. From what is stated, however, we cannot see that the action of the electrical bath differs very widely from general electrization. For example, Dr. Schweig found that the temperature is elevated from two to six-tenths of a degree by the bath. We have frequently seen the temperature raised as much as this, and several times to one and even one and a fifth degree, by general and local faradization combined.

Under the head of "Therapeutic Effects and Uses" our author tells us what the electrical bath will do as a diagnostic agent. The patient is only to be placed in the bath and the seat of disease will be made known by the pain which is then excited by the electricity. No particular diseases are mentioned as capable of being detected in this way, so we suppose the method is equally applicable to all disorders.

Another remarkable property of electrical baths is "their admirable adaptability as a prophylactic." Can it be that every one is expected to take daily baths in order to ward off some lurking disease that may possibly attack him?

More than half of the book is devoted to special therapeutics of disease, and of the thirty-four cases which are related at length but one failed to be cured. Even a case of locomotor ataxia "got as well as ever," although he did suffer a relapse a year later. The other cases were of various affections such as hemiplegia, chorea, infantile paralysis, rheumatism, and "mercurio-syphilitic cachexia."

W. S.

ART. XXXV.—*Transactions of State Medical Societies.*

1. *Transactions of the New Hampshire Medical Society.* June, 1875. 8vo. pp. 173. Concord, 1876.
2. *Transactions of the Medical Society of the State of West Virginia.* May and June, 1876. pp. 125-217. Wheeling, 1876.
3. *Transactions of the Colorado State Medical Society.* June, 1876. pp. 92. Denver, 1876.
4. *Proceedings of the Medical Society of the State of Oregon.* July, 1876. pp. 60. Portland, 1876.
5. *Transactions of the Texas State Medical Association.* April, 1876. pp. 212.
6. *Proceedings of the Delaware State Medical Society.* June, 1876. pp. 12.
7. *Transactions of the Wisconsin State Medical Society.* For the year 1876. pp. 149.
8. *Transactions of the Medical Society of Virginia.* Oct. 1876. pp. 138.
9. *Transactions of the State Medical Society of Michigan.* May, 1874. pp. 134.

1. THE current number of *New Hampshire Transactions* contains little that demands special notice. President S. M. Whipple, in his annual address, agitates the subject of medical reform, demanding protection for the public and the profession from the swarms of quacks that now enjoy the largest liberty for mischief.

From the report of a committee on statistical information we learn that there is a marked excess in the prevalence of typhoid fever and other zymotic diseases in districts which are marshy, or which have a clay subsoil, as compared to localities with good drainage and porous subsoil.

A report on surgery, by Dr. J. W. Parsons, contains a case of persistently

recurrent neuroma in the stump of a forearm. Three times the diseased extremities of the nerves were removed, and twice besides was amputation repeated. Since the last amputation three years and a half have passed without further trouble. A remarkable recovery, with perfect use of the whole extremity, is reported in the case of a labourer whose forearm was broken, the humerus dislocated, and its head forced through the skin of the axilla, so that it rested on the ribs, outside the integuments. The control of arterial hemorrhage by pressure above the wound is illustrated by some striking cases. The case of a frail and delicate woman is reported, who was in a wagon struck by a railroad train. One thigh was comminuted for four or five inches at the junction of upper and middle thirds, with a large lacerated wound lower down. The leg on the other side had both bones comminuted. She was placed on a Crosby fracture-bed, and ten days later gave birth to an eight-months child, stillborn. Septic fever shortly afterwards appeared with numerous large abscesses in back, hips, and limbs. Pus burrowed between the muscles, "involving nearly the entire length of the limb." Under tonics and supporting treatment she "recovered the use of her limbs with very little deformity," firm union, and the ability to perform all her household labours. The time occupied is not stated. Drs. Crosby and Wilkins, of Manchester, treated the case.

Aspiration was performed twenty-five times in about three months in a case of pleuritic effusion, with communication between the lung and the pleural cavity. Six-and-a-half gallons of fluid had been removed, and the patient was improving.

Dr. Carr found the hypodermic use of the fluid extract of Gelsemium to arrest, almost instantly, epileptic convulsions.

Dr. A. B. Crosby has an admirable paper on *A Lost Art in Surgery*. Cleanliness is the art, and he shows us how it can be restored. He believes, and gives confirmatory evidence, that thorough disinfection will render perfectly safe and wholesome the most deadly wards of the oldest hospitals. Only a gaseous disinfectant can reach all the lurking places of infection. Chlorine gas, generated in great volume, is the agent he has found perfectly efficacious. Of course absolute cleanliness of instruments, clothing, surgeon's and nurse's hands, and everything else, must equally be insured.

If Dr. Crosby is correct, the at present fashionable outcry against solid and substantial hospitals, and demand for cheap and flimsy "pavilions," to be pulled down in a few years, are utterly unreasonable and needless. And just this inference he does not fail emphatically to draw. The whole paper is one of profound interest and importance.

2. In the absence of the President of the *West Virginia Society*, Vice-President J. O. Wall delivered, upon short notice, a very readable address upon American progress in the art and science of medicine.

Dr. Baguley, of Wheeling, describes the case of a young man who lived for twelve months with a pistol bullet embedded in his brain. The wound was over the left superciliary ridge, and a probe entered some three-and-a-half or four inches. Partial paralysis on the right side and loss of the power of speech, though apparently without mental impairment, were the symptoms observed by the reporter, when called, three or four days after the accident. Speech returned in a few days. In three weeks he was able to walk about the house, though complaining of pain, numbness, and loss of power, in the right arm. These symptoms persisted until death. A little less than a year after the shooting, he began to work two or three days in the week as a mule driver in the mines. Severe pain in the head soon appeared, became very severe, and he rapidly

sank, and died two days after the pain appeared. The ball was found partially encysted "about the middle of the left lobe of the cerebrum, and an inch below its upper surface." The entire brain was congested, with some purulent softening around the ball. The membranes also were inflamed.

The same gentleman reports the post-mortem of a man who had suffered from vague dyspeptic symptoms, increasing debility and emaciation, and abdominal tumour. Dropsy of the lower extremities, constipation, and dyspnoea became prominent as the end approached. The liver was found to be immensely enlarged, weighing seventeen pounds, smoothly rounded, not hardened, but of an intense blackness, except for "round white masses" interspersed throughout its substance.

Dr. R. P. Davis contributes three cases to enforce his views as to the propriety of using the trephine in injuries of the skull, more frequently than has been of late generally advised.

Dr. John Frissel continues a series of cases, commenced in a previous number, by presenting brief notes of some twenty-odd cases of cancerous disease met with in his own practice.

Dr. E. A. Hildreth presents some short notes of the lives and labours of eminent physicians, who have practised in Wheeling from its first settlement. The epidemics of the same period are also noticed.

3. In the *Colorado* publication, Dr. H. A. Lemen has an article treating of the effect of the local climate upon consumptive invalids. The predominant idea is that only cases but little advanced, and also able to purchase good accommodations, are likely to be relieved by a residence in the rarefied atmosphere of Denver.

Dr. A. Stedman, writing of the effect of the climate and the great elevation upon disease, says that rheumatism is much less frequently complicated with heart trouble than in lower countries. Nervous symptoms are more prominent, in connection with any acute illness, here than at less elevated points. Pneumonia, he believes, is more rapid in development, and sometimes also in resolution. Bleeding is thought to be more needed than in a denser atmosphere. Convalescence from acute diseases generally is thought to be retarded.

Dr. Chas. Denison gives the results of a few series of tests for ozone. These are not claimed to present any striking facts, though perhaps indicating a moderate excess of this element.

Dr. Whitehead reports a fatal case of tumour, apparently ovarian, in a girl less than nine years of age. The ordinary outward signs of sexual maturity were present, together with imperfect and painful menstruation.

Several other brief articles and interesting cases, contributed by members of the Society, which do not require comment, conclude the volume.

4. The little pamphlet of the *Oregon Society* contains several sensible and practical reports and papers, together with two or three interesting accounts of cases. Of the latter, one illustrates the power of nature to repair injuries seemingly irreparable. A lad of twelve years had his hand and forearm dreadfully torn, the brachial artery severed, and the humerus comminuted by a charge of buckshot from a gun, which he was dragging by the muzzle. Of course the first impulse was to amputate. But the other plan was adopted, and at the end of two months, though not fully recovered, the patient had a useful arm, but slightly shortened, though with considerable loss of muscular tissue.

The most extraordinary feature of this publication is a truly original "poem" of some three or four hundred lines. We have before known medical essayists

to "drop into" poetry, for an occasional couplet or two; but such a sustained flight as this, is, in our experience, wholly unprecedented. Dr. Holmes must look to his laurels, and Joaquin Miller must be contented with a divided empire as poet of the Pacific coast. We should like to make some extracts, but find it impossible to choose from so much richness.

5. The most important paper in the *Texas* publication is a prize essay by Dr. Richard Bibb upon the *Eucalyptus globulus*. The history, botanic character, and various uses of the plant are discussed, with special reference to its remarkable sanative properties. Whatever difference of opinion may exist as to its virtues as a drug, it seems pretty certain that the growing plants exercise a remarkable protective influence against malaria.

Dr. W. J. Burt presents a report upon the anatomical and physiological differences between the white and negro races, and the resulting variation in their diseases.

Among the anatomical differences mentioned, Dr. Burt states that in post-mortem examinations of coloured soldiers the liver was found larger, and the spleen much smaller than in white men. We wish that, while speaking of the negro's susceptibility to particular diseases, the writer had given us some information as to his comparative tendency to contract measles and scarlet fever. In recent census reports we noticed some curious anomalies in the proportionate mortality from these diseases, which we conjectured might have connection with the larger or smaller proportion of negroes in different States.

Many interesting medical and surgical cases are reported, among which are three instances of imperforate hymen described by Dr. S. R. Burroughs. In one, an infant three days old, the membrane was so placed as to cover and occlude the meatus. *All the cases are instructive and well presented.*

6. The little pamphlet issued by the *Medical Society of Delaware* consists solely of the Secretary's minutes. If any essays or addresses were submitted, they are not here printed or even mentioned. We are sometimes tempted to wish that this course was oftener pursued by similar societies.

7. In his annual address, President Whitney, of the *Wisconsin Society*, sets forth with considerable vigour that highest but much neglected duty of the profession—popular statement and practical enforcement of hygienic laws. It is not pleasant to tell heads of families that the air of their rooms is poisonous, and the emanations from their cellars or sink-drains are responsible for typhoid or diphtheria; nor is it a welcome task to point out, to proud and ambitious parents that their children are being ruined by the physical and mental unwholesomeness of school-life; but such should be regarded as the most important and imperative of duties.

Dr. Meacham, Sr., reports a cure of occipital aneurism by ligation of the right common carotid, below the omo-hyoid muscle. Previous examination showed the circulation in the tumour unaffected by pressure higher up, or upon the left carotid. The swelling extended "pretty generally over the occipital region," had attained in three or four months the size of a very large orange, and pulsated strongly. *No unpleasant symptom followed the operation.* Slight pulsation remained in the aneurism, but diminished daily till it disappeared a fortnight later.

As bearing on the vexed question of maternal impressions, Dr. Day says, that of over two thousand labours attended by him, he found not one instance in which there seemed to him to exist any good evidence that the marks or

deformities of the infants were connected with shocking or repulsive objects seen by the mother. Yet he has found the popular belief in such connection universal. Circumstances, long forgotten, were commonly recalled to mind and blamed for the imperfection of the child.

As an example of literal *midwifery*, Dr. Day narrates an instance where a child's scalp was rent for eleven inches, and widely separated from the cranium, under the impression, in the mind of the *sage femme*, that it was the bag of waters! The wound did so well that, after three days, surgical attendance was declined as a needless expense, and entire recovery was said to have followed.

Dr. Wm. Fox reports a curious case of occluded vagina, retained menses, and pelvic abscess resulting in a fistulous opening in the groin. Previous to the formation of the abscess the retained menses had been evacuated, and communication restored through the vagina. Yet, for five or six months afterwards the catamenia passed through the fistula. This closing, the flow followed its normal course, but gradually diminished, until in a year's time signs of retention again appeared. Twice occurred this sequence of events, each time relieved by puncture and dilatation in the direction and situation of the vagina. This young girl had had scarlatina when quite young, and was left with hearing much impaired. Cicatrization, after sloughing of the vaginal mucous membrane, is thought to have been the source of the trouble.

Removal of inverted uterus by ligature, and a curious case of reflex paralysis (aphasia) and epileptiform convulsions, from undigested food remaining in the intestines, are reported by the same writer.

In a very interesting paper upon the Etiology and Prophylaxis of Puerperal Fever, Dr. A. Grætinger ably argues for the essential identity of this and other forms of septic disease. His hints on prevention are excellent.

Dr. Rind mentions a case where regular menstruation began at the age of nine years. The mammary glands remained undeveloped, and secreted no milk after the birth of a child, when the patient was some twenty years old.

Dr. W. C. Butler, in his article on Cerebro-Spinal Meningitis, attacks the inflammatory theory of the disease, and upholds the idea that its phenomena are those of depression, and produced by a blood-poison.

Vaccination from the cow, is strenuously urged by Dr. E. H. G. Meacham.

Difficult dissection and successful removal of a tumour in the neck; cases of sympathetic inflammation of the eye, following injuries to its fellow; hot-water injections for uterine hemorrhage; ruptures of uterus and vagina—all form subjects of instructive notes by different reporters.

8. The present issue of the *Virginia* publication is included between the covers of the *Virginia Medical Monthly*.

Much of the matter of this pamphlet is arranged in the form of synopses of recent progress in different branches of medicine and the allied sciences. In a paper upon the Advances in Therapeutics, phosphorus, apomorphia, salicylic acid, monobromide of camphor, jaborandi, and several other potent drugs, are cited as powerful weapons newly found or newly appreciated.

It will be readily understood, that, however well prepared, summaries of recent advances in chemistry, pharmacy, materia medica, and surgery, are little adapted to analysis and criticism.

A report upon Hygiene and Public Health, by Dr. Cabell, gives a condensed statement of sanitary knowledge and sanitary work as understood and explained by the most eminent sanitarians of our time. It is designed to awaken the interest of the profession in this most important subject, in the hope, event-

ually, of inducing the people and the legislature to arouse from the sluggish indifference with which heretofore they have regarded—or disregarded—the whole matter.

Dr. Hooper presents several examples of the successful use of the aspirator in abscess of the hip-joint, intestinal obstruction, peri-nephritic abscess, etc.

9. In the minutes of the *Michigan Medical Society* we find a notice of a wound of the common carotid artery. Diffuse aneurism followed. Twenty-four days after the injury, the tumour was opened, the clots removed, and ligatures applied above and below the wound. Complete recovery occurred, except for slight impairment of voice.

Dr. Christian presents a record of the monstrous or deformed children born under his auspices, with some reflections upon the subject. President Brodie treats in a sensible manner the special wants and interests of the medical profession in his State. Dr. Southworth strongly maintains that puerperal fever is in no sense contagious. He indeed denies the existence of such fever as a specific disease. Dr. Frothingham contributes an interesting and instructive paper on Sympathetic Ophthalmia. He thinks that the danger of grave disease in one eye following injury or irritation in the other, is not generally known or fully appreciated. Dr. Parmenter describes a score of cases of a fever which seems to him not precisely identical with typhoid, but which he is unable satisfactorily to name.

B. L. R.

ART. XXXVI.—*Health Reports.*

1. *Fourth Annual Report of the Secretary of the State Board of Health of the State of Michigan.* 8vo. pp. 192. 1876.
2. *Ninth Annual Report of the Board of Health of the City of Boston.* 8vo. pp. 91. 1876.
3. *Report of the Board of Health of the City and Port of Philadelphia,* for 1875. 8vo. pp. 351.
4. *First Annual Report of the Secretary of the State Board of Health of the State of Colorado.* 1876. pp. 141.
5. *Second Annual Report of the State Board of Health of the State of Georgia.* 1876. 8vo. pp. 198, lxxxviii. Atlanta. 1877.

1. THE present issue of the *Michigan Board* fully maintains the high standard of practical usefulness, and thorough earnestness, set up by its predecessors. We are glad to observe that, besides attending to its immediate work, the Board is acquiring a library of such books as are fitted to increase the enlightenment of members and their successors. Nearly one hundred works were bought during the year.

Much attention and ingenuity are devoted to diffusing knowledge and exciting interest among the people, in regard to the objects and methods of sanitary science. Thus circulars are sent to editors of newspapers, directing notice to the efforts making to collect meteorological facts and information as to the relations of water-supply to health. Another tract is sent to the school-teachers and directors, aiming to induce them to spread among their pupils knowledge of the means to resuscitate the nearly drowned, as taught in another circular which accompanies it, and which we formerly noticed.

An attempt is making to obtain regular and numerous reports of diseases prevailing, from all parts of the State. As has been the aim in Massachusetts, so here the endeavour is to devise blanks which shall enable the report

ing physician to give the most information with the least time and labour. Two blanks, to be printed on postal cards, are exhibited. The first, and simplest, is in use; the second is what the Board would like to use, if correspondents prove sufficiently zealous. The latter is quite full, and by its ingenious system of signs, really requires little more trouble than the other.

The extremely valuable experiments upon illuminating oils, and the still more important inspection of these death-dealing fluids, continue to form a prominent subject for the Board. A very great reduction in reported accidents has already rewarded the labour expended.

Typhoid fever epidemics have been investigated, so far as possible, with a view to ascertaining their causes. Contaminated water has been apparently a frequent source of the disease.

Passing to the essays and reports which occupy the larger portion of the volume, we find an eminently practical address by President Hitchcock, upon the *Achievements of Hygienic Science and Art*. The increased duration of life in modern times is pointed out as a grand proof of what has been done. The still wide field of preventable disease and death, is graphically sketched as an incitement to further efforts. Speaking of scarlatina, Dr. Hitchcock earnestly deprecates the idea, so generally met with, that children *must have* the disease. On the contrary, he urges that the malady is preventable, and should be guarded against with all possible care.

A paper by Dr. Kedzie, on *Means of Escaping from Public Buildings*, has acquired a new and profound importance from the frightful scenes in Brooklyn, which so shortly followed its preparation. Legislation, to compel outward-opening doors, and, for hotels, some device for descending from the window of each room, is emphatically demanded.

Essays upon Vaccination, and upon Criminal Abortion, seem to aim at conveying correct information, and instilling correct principles, rather than at originality.

The same remark may be applied to one of several papers upon *Water and Water-Supply*. Another article on this subject, being founded upon replies made to circular letters of inquiry, brings together many curious and instructive facts as to the influence of different waters upon the health of their consumers. Many cases of typhoid fever are reported which seem to have been caused by contaminated wells. And in one case a large number of persons suffered from severe but transient abdominal disturbance, after once using water from a filthy creek.

Still another paper on *Water*, by Prof. Kedzie, is adapted to be very useful to unprofessional readers. We think it might with advantage be widely circulated among the people, as a hygienic tract.

Secretary Baker makes some intelligent criticisms and suggestions upon *Methods of Collecting Vital Statistics*.

The *Ventilation of Railroad Cars* engages the attention of Prof. Kedzie, in a brief paper. Two original plans are here suggested, and illustrated by wood-cuts. We should hope these plans might be tried, as seeming feasible and effective, did we not despair of the success of any system while each passenger is free to manipulate every valve and window within his reach, and while conductors and brakemen continue utterly insensible to atmospheric foulness. The evil in question is a very great and serious one, and cannot fail to be an important source of debility and disease.

In one of the reports, received from correspondents, concerning diseases prevalent in particular localities, we find the opinion stated that the immense accumulation of wood sawdust occurring around the innumerable saw-mills,

is a serious cause of disease. Intermittent fever is attributed to this source. The evidence of the causative relation is not given. When we learn that in several counties one-fourth the surface is estimated to be covered with sawdust, and that the deposits are constantly extending, it would not be strange if some effect resulted from the decay of this finely-divided vegetable matter.

Dr. O. Marshall presents a very interesting account of 160 cases of scarlet fever, occurring in the northern half of the city of Lansing, during 16 months, beginning January, 1875. In the other districts there occurred only fifteen cases. We regret that we cannot ascertain the population; but in 1874, the northern portion afforded "few, if any, cases of scarlet fever." The epidemic was at first mild, averaging eight cases, and no deaths, for the first four months; almost completely disappearing during summer, to reappear slightly in September and October, with but one death. Suddenly it spread, till November showed the appalling number of 45 cases and 7 deaths. December had 39 cases and 9 deaths. The succeeding four months gave, in all, 27 (10 in January), with 7 deaths. It will be thus observed that the transitions from moderate (?) to excessive prevalence, and back, took place with extraordinary abruptness. Prior to October all cases but one or two, were of the simple type; afterwards *scarlatina anginosa* was most frequent, with many malignant cases. Temperature in severe cases rarely fell below 104°; often 106° and 107°. Diphtheritic spots and membranes were common in severe cases where the eruption was dark and blotchy. Large abscesses in neck were common. Consequent disease was rare—only two patients were thus troubled, and these both by deafness.

The epidemic was more prevalent, and more fatal, among females than males—99 cases with 17 deaths, and 61 cases with 7 deaths. Fifteen cases over twenty years old, gave five deaths.

The progress of the epidemic seemed clearly to be by contagion. Eighty-three cases followed others in the same houses. Eighteen occurred after visiting, in visitors or their associates. In five instances it appeared probable that the physician conveyed the contagion. Seventeen cases sickened in schools where were pupils not fully recovered. Clothing, rags, books, furniture, and houses which had become infected, conveyed the disease in a dozen cases.

A school-teacher watches all night with fever patients, and next morning, sitting down by a little pupil to explain his lesson, gives him the disease. A young man nurses sick children, goes home to his father's farm, and wearing the same clothes, takes his little brother on his lap. The same result follows. A clergyman visits a family stricken with this disease, and also buries three of its members from the church, where the bodies are on view. Seven members of his own household are smitten.

Beginning near the business centre, the disease spread in the line of greatest night and morning travel, and also in the direction of the prevailing wind current. In nearly the same direction, on a travelled road out into the country, occurred eleven more cases within the township, but outside the city.

In this epidemic a certain house was spared, although cases occurred in houses adjoining, and opposite, and although, shortly before, scarlet fever visited different families in it for three successive years. Thorough purification of the house had been procured after this three years.

The epidemic was worse in low, marshy locations, and especially along a half-stagnant ditch or creek. Unusual amounts of rain in September and October rendered the marshes fuller than usual in November. The "relative humidity" in the two fatal months was respectively 84 and 90—saturation

being 100. Bad air and crowded apartments seemed to promote malignancy. The primary schools furnished these conditions in perfection, and contributed sixty-six of the cases, before they were closed, December 13.

Dr. Marshall is, however, convinced that no case, in any locality, arose independently of contagion.

2. The latest Report of the *Boston Health Board* is an excellent one. Important facts are forcibly presented, the duties of corporations and individuals clearly stated, and suggestions wisely made. We need not refer again to the reiteration of the one great need of the city—an entire change in its sewerage system. Recognizing existing evils beyond their power to remedy, the Board vigorously attack those which are more susceptible of amelioration.

The inspection of provisions has evidently been vigorous, and we doubt not beneficial. When we notice that the long list of articles condemned includes seventy-two "lots" of green apples, and 710 cucumbers, in addition to some tons of meats and fish, we may well congratulate the mothers of small boys, if not the apothecaries of Boston.

Constant progress is making in banishing from the city-limits fat-rendering and similar pursuits. The powers given to the Board are not arbitrarily nor suddenly exercised. Ample warning and long notice is given to owners, and every encouragement is given for removal to the city abattoirs, or to other proper places.

Sixty-seven houses have been vacated, by order of the Board, as unfit for occupation, upon neglect of owners to heed previous warnings.

Urinals have been gradually scattered throughout the city, though still inadequately. The public have shown a gratifying appreciation of them, by their neat and decent use.

In regard to the fact that the death-rate of Boston appears higher than that of some other cities, we are reminded that the returns of deaths are unusually full, while the census returns are not inflated, as is sometimes the case. Without still-births, the rate is 26.77; with these, 28.08.

Dr. W. L. Richardson contributes an essay on *Infant Mortality*. Some of the facts as to the influence of foreign parentage, and of locality, in increasing the death-rate of infants, are very striking. The writer, however, has neglected to state the proportion of foreign and native parents, or the numbers living of each class of infants, without knowledge of which his figures would be incapable of interpretation.

Remarkably favourable results followed the removal of sick infants, from the different dispensary districts, to a sea-shore home on the adjacent coast. Of 133 children thus sent, but two died; while three-fourths were discharged well, and only a dozen not relieved. Pure milk was allowed to stand one hour, and then the upper quarter-part removed for the babies' use. This was boiled, and diluted with from one to five parts of water, according to age of the child. Repeated experiments convinced the writer that this was the best substitute for the mother's milk. In a certain charitable asylum for infants, however, the mortality has fallen off one-half or two-thirds, since mothers have been received with their children, and allowed to partly nourish each her own and another child, or wholly to suckle either one that needed the natural sustenance.

A noble charity, called the *Diet Kitchen*, has, by providing pure milk for babies, upon order from the dispensaries, illustrated in a remarkable manner the supreme importance of fit and good food for infants. The improvement produced by this diet, even among the most unpromising surroundings, is

reported to have been truly wonderful. This may be easily believed when we remember what kind of food is generally given to the children of the poor, after weaning.

A much needed law has been passed by the State, imposing upon the local health authorities the supervision of all persons who take babies to board.

3. The current number of the *Philadelphia Health Reports* is, like its predecessors, to a great extent a registration report. About one-seventh of its pages are more especially devoted to sanitary and hygienic matters. Nevertheless, the more strictly statistical portions of the work contain tables which clearly teach their own lessons, besides many judicious comments to bring out the meaning of more obscure or more complicated tabulations.

We are glad to learn that the Municipal Hospital (for infectious diseases) has been provided with a disinfecting annex. Here, recovered patients may bathe, pass into dressing rooms, and put on clothing which has just been perfectly purified. Here, also, mattresses, bedding, and other clothing, and furniture from infected houses, which were formerly ordered to be burned, can be rendered perfectly safe. The disinfection is accomplished in one or both of two rooms, one for hot air, and the other for fumigation.

The construction of intercepting sewers, on each side of the Schuylkill, is urgently counselled, as necessary, at least to the future health of the city. Not satisfied with their ending just below the dam, Dr. Ford thinks they should be continued to the mouth of the river. He very justly anticipates future trouble, if sewage is allowed to accumulate in the sluggish tide-waters below Fairmount. Meanwhile, steps should be at once taken to diminish the influx of abominations at and below the Falls.

A somewhat full description is given of the new abattoir and cattle-pens on the Schuylkill. These are spoken of as every way excellent in design and execution. As to location, Dr. Ford prefers to say little until experience shall have shown its evils and its merits. He thinks, and our readers will agree, that it is high time to begin the gradual abolition of slaughter-houses scattered throughout the city.

The constantly growing evil of intra-mural interments is briefly but forcibly stated. The time has come, says the Report, when a commission should be appointed to collect evidence and prepare a memorial for presentation to the Legislature. For it is only by a revocation of charters, granted the cemeteries by this body, that interments can be stopped; and it is not to be expected that such revocation would be unopposed.

The statistics for 1875 show a diminution of marriages and of births, each about seven and a-half per cent.; while deaths increased nearly seventeen per cent. While in 1874 births exceeded deaths by 3258, in 1875 the excess on other side amounted to 596. A similar reversal of the relation usual in prosperous times, occurred to a somewhat greater extent in 1864 and 1865.

In commenting upon the births of the year, Dr. Ford continues a discussion which has excited some interest of late years among vital statisticians: the causes and connections of the monthly variations in the number of births. He adopts the view of Dr. Baker, of Michigan, that while the popular preference of certain seasons for marriage, is largely due to external circumstances, and does thus largely produce the inequality in question, yet both the one and the other are probably in part governed by some physiological law connected with season or climate.

The decrease in the rate of marriages, before referred to, was but a continuation of a falling off already quite marked in 1874. It is believed that registra-

tion has been not less perfect; and the figures therefore represent facts, and may be attributed to depression of industry and of business.

The ages of parties marrying brings out curious facts. A woman has forty-two times a man's chance of getting married before the age of twenty. One-fifth of her chances are before that age. At twenty-five, if still single, she has left behind her forever, two-thirds; at thirty, six-sevenths; and at forty, twenty-nine-thirtieths, of her matrimonial chances. Most unjustly, a man's chances have considerably greater longevity.

The death-rate of the city was 22.25, some 2.5 larger than in 1874—which was lower than usual—but yet somewhat below the average since 1861. The percentage of mortality among children under ten years was greater than for five years preceding. Under five years the mortality was relatively not so excessive; while, singularly enough, the percentage of deaths under one year of age was smaller than in either of the other years named. The extensive prevalence of diphtheria and of scarlatina, affecting principally children over one year old, is especially accountable for these last peculiarities, and to a considerable degree for the general excess in the year's death-rate. Croup, however, was much more, and bronchitis considerably more, than usually fatal among infants.

The midsummer mortality among children was decidedly larger than in 1874, though not much above the recent average. It was, however, remarkable for its even distribution over the three months; June being slightly, and August considerably more fatal than was July.

We need scarcely add that Secretary Ford's work generally reflects credit on himself and the Board.

4. In a paper in the *Colorado Report*, entitled "Altitude: Its Influence on Health," Dr. Edmondson states that asthma has, in his experience, invariably yielded to the influence of some one or other of the different levels found in this State. Consumption has been known to originate there, though rarely. Cases coming there for relief often come too late. Epilepsy, chorea, and heart affections are not benefited by residence in Colorado. Acute disease, he thinks, is attended with greater prostration than in lower countries.

A carefully prepared essay on Sewers and Sewerage, by Dr. Bancroft, will, if its suggestions are heeded, be of great service to the future health and prosperity of the State.

Dr. Horn reports upon the numerous Mineral Springs of Colorado. The Indians, we are told, were in the habit of bringing their sick to these restorative waters.

Dr. Lemen, in a report upon Pulmonary Consumption, gives the history of some forty cases that came under his observation. Advanced consumptives, apparently, are not benefited by the Colorado climate.

Several other papers, especially one on Schools, add to the value of this publication, though calling for no special comment.

We congratulate the State upon this early and promising beginning in the intelligent supervision of the public health.

5. The newly organized Health Board of *Georgia* has passed through a trying ordeal. Scarcely was it constituted when yellow fever appeared in several seaboard towns, and increased to a degree of severity sufficient to paralyze business, and interrupt nearly all branches of industry in the centres of population.

Not only in regard to the registration of vital statistics, but in regard to

sanitary measures, the Board has found itself almost powerless. Lacking any authority to compel obedience, it has seen its existence ignored and its counsel neglected. Government and people alike seem to have failed in appreciation of the objects for which the Board was created.

The largest part of the present work is occupied with accounts of the recent epidemic of yellow fever. Whatever diversity of opinion has existed as to the origin of the disease, in the different cities and towns afflicted, there is no attempt to deny that the local conditions were, in most cases, fearfully favourable to its spread. Here it is that the members of the Board most bitterly feel the want of power, and the want of coöperation, which forced them to witness the extension of a pestilence which they believe should have been largely controllable.

While fully appreciating the agency of bad sewerage, malaria, and bad water, in assisting the spread of the recent epidemic, the Board believes the origin of the disease to have been infection, brought in vessels from the West Indies. Evidence points strongly to earth used for ballast in ships coming from Cuba, as the immediate bearer of the contagion in some cases. The first cases generally appeared in ports or stations in close communication with infected countries, and the disease was propagated in the lines of travel from those points. Local conditions seemed not only to determine the epidemic prevalence of the disease once introduced, but also to occasion its greater or less degree of malignancy.

In some parts of the State, at least, there seems to have been some difficulty in distinguishing the earlier cases from the "bilious-remittent" of the country, and also from the "dengue."

We are glad to notice that prominent sanitarians in New York City proffered valuable help to Savannah in the form of cargoes of disinfectants and hospital stores.

An essay upon Food, by G. F. Cooper, of the Board, and another by Dr. Ely McClellan, U. S. A., upon the relations of health organizations with civic authorities, add to the interest and value of the publication. The latter has special reference to the economic aspects of the epidemic prevalence of yellow fever.

A considerable amount of testimony concerning the conditions of the pestilence in different districts, is collected in the form of an appendix to the main volume.

We sincerely trust that the governing powers of Georgia may be made to see and understand the true scope and functions of their Health Board, and allow it no longer to remain almost powerless through the lack of authority and of funds.

B. L. R.

ART. XXXVII.—*Transactions of the New York Academy of Medicine.*
Second Series, Volume II. 8vo. pp. xlvii, 458. New York: D. Appleton & Co., 1876.

THE proceedings of learned societies, particularly those having for their object the advancement of medical science, occupy a position in our periodical literature second to none; whether considered in regard to the presumptive importance of their labours, or the attention and consideration they receive from their readers. The value of such works is estimated to be in direct ratio with the validity of the claim of the association in question, to be looked upon

as a representative body, such claim being closely connected with the personal standing and reputation of its members. The importance to the profession of the transactions of medical bodies, therefore, will vary within wide limits, in sympathy with their source; but the presence of the poor and indifferent merely assures us of the creditable existence, somewhere, of a higher standard of excellence than these have attained.

The handsome imperial octavo volume under consideration furnishes a happy illustration of the class last mentioned; this example, however, does not rely for its position solely upon the prestige of noble birth, but, in addition to this, its claim to be regarded as classical is fully substantiated by the quality of its contents.

The last volume of Transactions having been issued in 1873, the present includes papers read before the New York Academy of Medicine from September 17th, 1874, to July, 1876. On account of the necessary delay in accumulating material for this volume, many of the articles have been already made the property of the profession, and, becoming part of its literature, have been previously noticed in these pages. This renders an extended analysis, at the present time, superfluous and unnecessary. We will, therefore, merely indicate in a general way the leading thoughts presented for consideration, and recommend our readers, for closer study, to the articles themselves.

The titles included in the table of contents are twenty-two in number, and follow in the order in which they were read before the Academy, without any arrangement according to the subjects. As the topics generally are of great interest, it is to be regretted that some brief report of the discussion which they excited had not been preserved, and published with them, thus adding materially to their value, without making serious change in the size of the volume.

The opening paper of the volume is from the pen of Dr. GURDON BUEK, and is entitled *Abscesses Originating in the Right Iliac Fossa, with Statistics*.

It is fitting that we should pause to pay some tribute of respect, feeble though it be, to the memory of the distinguished author of this paper, whose death has just been announced.¹ Known throughout the world in connection with Buck's extension apparatus for fractured thigh, as well as by his numerous contributions to surgical literature, his is one of the names that men will not willingly let die. His energetic, industrious, and eminently practical mind developed those qualities that won for him a place in the front rank of American surgeons, and earned a wide reputation for that originality and skill, whose achievements are still fresh in our minds. He

"Saw the distant tops of thoughts
Which men of common stature never saw."

His last work was published in 1876, entitled *Contributions to Reporative Surgery*, and is noticed on another page.

In the paper on Iliac Abscess following Peri-typhlitis, Dr. Buek recommended opening by a free incision as soon as the abscess pointed; the knife being entered by the side of an aspirator needle used as a probe. It is accompanied by the report of a successful case, and gives a table of nine others by different operators, with a similar favourable result. One statement made in the article certainly must convey a different impression from that intended by its author. It says: "Nor is any allusion to the operation to be found in the most recent text-books on medicine and surgery, such as Aitken, Reynolds,

¹ He died in New York, March 6th, 1877, at the age of 70 years.

and Flint, or Holmes, Gross, or Hamilton." The others may not be quite so explicit; but certainly Gross could scarcely express himself more clearly than he has done in the following words:—

"The treatment of this affection is by an early and free incision; for unless the case be met in this way the matter will be sure to burrow more or less extensively, and may even find vent by the bowel, thus eventually causing a stercoraceous fistule, since, notwithstanding this occurrence, the abscess will also ultimately discharge itself externally."

In Dr. SAYRE's article on *Anchylōsis*, he emphasizes the after-treatment of fibrous anchylōsis, by adopting the expedient of surrounding the entire limb with a bandage, placing a sponge compress over the main artery. This is done in order to lessen vascular excitement by diminishing blood-supply. He also surrounds the joint with ice-bags, to reduce the tendency to inflammatory reaction following the forcible extension and flexion required to rupture the adhesions, which is generally performed with the aid of an anæsthetic.

In the case of *Multiple Hepatic Abscess*, no other cause is suggested than portal phlebitis, perhaps connected with malarial poisoning about one year before; the abscesses were found at the autopsy to be confined to the right lobe of the liver, the left lobe and the spleen being normal.

Dr. WYLLIE recommends for *Hospital Construction* the style of the one-story pavilion-ward, with ridge-pole ventilation. There are some practical objections to this plan that have apparently not received from its advocates sufficient attention. To begin with, as it is intended that they shall become foul and then torn down, the first part of the programme will be faithfully carried out, and the wards allowed to become tainted, because they are only temporary; but when the time comes for them to be destroyed, there will generally be found abundant and convincing reasons why the board of managers should postpone it to a more convenient season. Secondly, in order to secure good ventilation in the centre of a city it is necessary to have either high buildings or a large lot of ground; but a judicious combination of both will be found to combine the advantages of good ventilation and easily-regulated temperature. Lastly, if the drainage be at all deficient, or the surrounding country be malarial, the patients sleeping in the upper floors would fare better than those in a pavilion-ward, nearer to the source of the miasmatic exhalations.

Dr. PEASLEE exhibited an instrument for *incising and dilating the uterine canal* to the normal dimensions, for the cure of dysmenorrhœal troubles depending upon stenosis; and reports very favourable results as compared with the operations of Sims and Simpson.

Dr. C. E. BILLINGTON furnishes an article upon *Diphtheria and its Treatment, with Statistics of One Hundred and Seventy-nine Cases*, in which excellent results are reported. Although a firm believer in the local origin of the disease, he is very loath to apply remedies topically to the false membrane, as he has seen bad results follow this course, but he medicates the throat by administering in decided doses, such remedies as tincture of the chloride of iron, chlorate of potassa, and salicylic acid—the same remedies that are relied upon by those who hold the contrary view as to the nature of the disease. It seems as if clinical experience, faithfully followed, will lead us to uniformity of treatment, even while our theories and deductions may be widely at variance with each other.

The articles on "Spinal Paralysis of the Adult, Acute, Subacute and Chronic (Inflammation of the Motor Tract of the Spinal Cord)," by E. C. SEGUIN, M.D.;

"A Consideration of Certain Symptoms associated with Morbid Changes in the Medulla Oblongata," by ALLAN McLANE HAMILTON, M.D.; "The Reparation of Brain Tissue after Injury," by JOHN P. GRAY, M.D., are all worthy of careful study, and have been already laid before our readers.

Dr. ISAAC E. TAYLOR furnishes a paper in two parts, the first being entitled "What is the Best Treatment in cases of Labour in Contracted or Deformed Pelves ranging from Two and a half to Four Inches—Forceps or Version?" Part II.: "Is Craniotomy, Cephalotripsy, or Cranioclasm, preferable to Cæsarean Section in Pelves ranging from One and a half to Two Inches?" These include descriptions and illustrations of Dr. Taylor's instruments, and give a good *résumé* of the subject reviewed.

Two papers upon the application of the spectroscope to practical medicine are supplied; the first by Prof. J. G. DALTON, and the second by GEO. B. FOWLER, M.D. "The Significance of Disturbed Action and Functional Murmurs of the Heart," by J. R. LEAMING, M.D., is a valuable contribution to the study of what are often considered blood murmurs. We regret that want of space forbids an extended notice of the scholarly production of GOUVERNEUR M. SMITH, M.D., on the "Epidemics of the Century and the Lessons derived from them," which advocates the study of sanitary science and the organization of means to promote it.

In the final article by GEORGE T. STEVENS, M.D., entitled *Chorea, its Cause and Treatment*, the following italicized proposition is offered:—

"Chorea is a functional disturbance of the nervous system, which may give rise to organic lesions, and which arises from irritation dependent upon anomalous refraction of the eye, and in a very large proportion of cases to hypermetropia."

How refreshing it is to the physician who has been worrying over capillary embolism of the corpus striatum, heredity, or rheumatic diathesis, to find that the trouble is only "anomalous refraction" after all, and the remedy is "glasses." At any rate his course is clear. When he has a perverse case of chorea he does his whole duty in the matter by giving the patient a note to the nearest eye-doctor, who then becomes responsible for the cure. So the physician is satisfied, the oculist is satisfied, and the patient is, or ought to be, satisfied; if he does not get well he can only blame himself. But when the doctor is alone, he has a lurking suspicion that he has heard of cases of chorea which have been cured by iron—not spectacles—but bromide of iron, cicicifuga, arsenic, and tonics, and which became completely well without having their eyes "corrected." He also recalls the very favourable results reported by Drs. Gray and Tuckwell (*Lancet*, Nov. 28, 1876, and *Monthly Abstract of Med. Science*, Feb. 1877, p. 58), from the purely expectant plan of treatment, without any aid from medical or surgical therapeutics whatever; and, as it has been asserted on good authority, that it is rare, even among what are considered healthy eyes, to find one which does not exhibit some anomaly of refraction, this complication may prove to be, after all, rather a coincidence than a cause of chorea.

F. W.

ART. XXXVIII.—*Extracts from the Records of the Boston Society for Medical Improvement, with Papers read before the Society.* Published in the *Boston Medical and Surgical Journal*. By the Secretaries of the Society, CHAS. D. HOMANS, M.D., FRANCIS B. GREENOUGH, M.D. Vol. vi., 8vo. pp. 292, 172. Boston, 1876.

So far as we are able to infer from the headings of the various papers here presented, only the last one-third part, constituting the supplement, is now published for the first time. The preceding portions are extracted from the pages of the *Boston Medical and Surgical Journal*.

In the appendix we find an excellent description of the symptoms, and the post-mortem appearances in a typical case of Addison's disease, contributed by Dr. J. N. Borland. The white corpuscles of the blood were largely increased in number. Death occurred by asthenia.

Dr. Haskett Derby reports two cases as a text for advocating the modern operation for strabismus in preference to the older method. The present procedure consists, not as formerly, in a division of the muscle, but in a severing of its attachment or insertion. A new insertion occurs, further back, and the muscle itself is uninjured.

The veteran and justly eminent pathologist, Dr. J. B. S. Jackson, gives an interesting sketch of his observations during a brief visit to the Island of the Barbadoes. He testifies to the present existence of the "Barbadoes leg," and of the "Chigoe," or parasitical worm, which burrows into the flesh of the naked feet of the negroes. Phthisis was found to be not unknown, although the climate is tropical.

Dr. B. E. Cotting combats the idea that the resulting scar is any indication of the efficacy of vaccination. He made the experiment of subcutaneous vaccination, obtaining the febrile and the protective results without any external vesicle or cicatrix.

A series of five cases of paralytic affection of the extremities without brain-trouble is reported by Dr. J. Baxter Upham. The attacks occurred without apparent cause and in persons of robust health.

The history of ninety cases of pneumonia is given by Dr. Borland. They were treated in the Boston City Hospital. The treatment was eminently supporting. Milk was used as a drink, and beef-tea and wine-why were freely administered. Twelve deaths occurred. Two very interesting cases of acute tuberculosis are contributed by the same gentleman.

A case of embolism of the external iliac artery, reported by Dr. George H. Lyman, is very instructive. Opium, bark, and stimulants assisted the patient to make a good recovery, after amputation of a gangrenous foot and leg.

Dr. C. Ellis contributes a very suggestive paper upon the Tendency of So-called Local Diseases to Generalization. The same gentleman gives an account of the post-mortem examination made upon a double monster—*ischiopagus tripus*—which was exhibited throughout the country some few years ago. The small intestines were in part distinct, and in part fused. One large intestine existed, and showed marks of being the union of two. The kidneys, one for each child, corresponded to the perfect lower limbs. One uterus with its appendages was easily recognizable, and also one bladder. A large cyst, upon careful examination, seemed to represent the other genito-urinary system. Other viscera were normally developed.

Dr. Joseph Sargent presents the results of a post-mortem examination made upon the body of a woman who, twenty years previously, impaled herself upon

the handle of a common pitchfork. The smooth and round-ended staff had passed up the vagina, through the abdomen and left diaphragm, and had broken or wounded the first rib. The autopsy showed the left lung compressed by the stomach and a large portion of the intestines, which had passed up through a hernial opening. Some agglutination, and other traces of inflammation existed on the peritoneal coat of the intestines near the diaphragmatic rent.

B. L. R.

ART. XXXIX.—*Blood-letting in Puerperal Eclampsia, Pathology, and Therapeutics; the old and the new.* By HENRY FRAZER CAMPBELL, M.D., of Augusta, Georgia, Professor of Operative Surgery and Gynecology in the Medical Department of the University of Georgia, etc. etc. 8vo. pp. 48. New York: William Wood & Co., 1876.

THIS is a reprint from the August number of the *American Journal of Obstetrics*, and a very full and able discussion of the questions at issue between those who oppose, and those who advocate, the use of the lancet in puerperal eclampsia. A question of serious moment at the present day, in view of the light that physiology and pathology have thrown upon the causes which induce eclampsia, whether in puerperal woman, in cases of non-complicated Bright's disease in either sex, or in children. In fact the whole subject of convulsive diseases, their origin, and proper treatment, is more or less involved in considering the question at issue in the pamphlet. In no class of convulsive maladies is there more at stake in a given case, or more necessity for that coolness of judgment, which is based upon a clear appreciation of the indications presented, than in those which occur to pregnant, parturient, or post-parturient women. There was a time when, for want of a true understanding of the conditions which in many cases give rise to puerperal eclampsia, physicians bled almost universally as a remedy, and repeated in many cases the act of venesection several times; but this system so largely passed away, that the question of the justifiability of bleeding in any case arose in the minds of many practitioners, a question made perhaps less important than otherwise, but still very vital in many instances, by the introduction of valuable remedies into our pharmacopœia that have been largely relied upon as substitutes for the lancet in controlling the convulsive movements.

No doubt the indiscriminate use of the lancet in former days, under a routine rather than a philosophic method of reasoning, did prove fatal to a large number of cases, where our present advanced knowledge teaches us it should not have been employed; but is it not equally certain that in many others which recovered, the loss of blood fulfilled the indications better than any system of medication without the lancet could have done, even provided that the bromides, chloroform, and hydrate of chloral had been known as they are now to us?

The pamphlet under review is one of a series of articles by leading medical reasoners, going to show that at least in puerperal eclampsia the abandonment of the use of the lancet is no longer believed to have been based upon sound physiological principles, except in perhaps a minority of the cases treated. The proportion of cases now saved is greater than when bleeding was generally resorted to, but not so much greater as to satisfy us that a return to venesection in certain types of the disease would not add to the proportion of cures. A reaction in favour of the lancet is evidently taking place in cases of puerperal convulsions, where there is no proof of the existence of granular degeneration

of the kidneys. Renal congestion, albuminuria, and the uræmic poisoning, resulting in convulsions, especially in plethoric primiparæ, indicate it is believed the use of venesection as the most reliable means at our command, aided by the administration of the medicines already mentioned.

Where the opportunity is afforded by due notice before labour, we hold that it is a wise expedient to examine, by chemical tests, and, if necessary, by the microscope, the urine of every woman, and especially of primiparæ, to determine whether it is albuminous, and, if so, whether there are any evidences of Bright's disease, so as to be ready to treat the case intelligently in the event of the occurrence of eclampsia during labour.

R. P. H.

ART. XL.—*Illustrations of Clinical Surgery.* By JONATHAN HUTCHINSON, F.R.C.S. Folio, pp. 23. Fasciculus V. Philadelphia: Lindsay & Blakiston, 1876.

ALTHOUGH it might be preferable to notice this work when completed, yet, as its author does not commit himself as to either its extent or duration, and each fasciculus is a valuable contribution to our science, we will continue to furnish the readers of the Journal with an abstract which may enable them to judge of the value of each part.

Plate XVII. is an illustration of Sub-arachnoid Meningitis, taken from an interesting case of punctured fracture of the skull, with wound of the middle lobe of the cerebrum, reported by Mr. Couper in vol. ii. of the London Hospital Reports. The fact that the delicate arachnoid membrane can limit purulent effusion, is thought by Mr. Hutchinson, to be shown to demonstration, by this case and plate, and his remarks go to show how minutely accurate may be the study of a case, even when its grosser anatomy only is considered.

Plate XVIII. shows Thrombosis of Longitudinal Sinus (with Pyæmia) after Osteitis. In connection with the next three plates, this one is regarded as proving beyond contradiction that pyæmia proper is due to inflammation of the veins. Expressing the hope that the publication of these plates may exert an influence upon medical opinion in this matter, Mr. Hutchinson throws down his gauntlet before the world. In this place it is only proper to give an abstract of his views, not to lift his gauge. According to the author of these illustrations, and be it remembered the authority of this surgeon to the London Hospital is deservedly high, wherever pyæmia follows an injury of the skull, there is first witnessed inflammation of the bone; next, extension to the dura mater; and lastly, the formation of a thrombus in the longitudinal sinus. He also thinks that were the veins in other parts of the body as easily inspected as is the case with those of the head, the same conditions, as precedents of pyæmia, would be found constantly. In this plate is shown a partially continuous thrombus beginning to form, and attention is drawn to the fact that it is attached to the mouth of the veins opening into the sinus. The case was one of inflammation of the bone following laceration of the scalp. The connection of the beginning thrombus with the patches of inflamed dura mater is well shown.

Plate XIX. is of Gangrenous Inflammation of the Skullbones after Contusion, taken from another case, but well representing the condition of the skull in the one from which the preceding plate was drawn. It has been sufficiently dwelt upon, and should be viewed in connection with No. XVIII.

Inflammation of Dura Mater and Thrombus in Sinus is admirably represented

in Plate XX. The thrombus in this case was very perfect, and its prolongations into large veins in the dura mater are very evident. It was a hollow tube, its contents, under the microscope, being shown to consist of pus, with much granular and fatty matter. Although this thrombus has no appearance of having given way, yet Mr. Hutchinson thinks it may in reality have begun to do so, and that the phenomena of visceral pyæmia, from which the patient died on the twenty-sixth day, may be often attributed to the passage into the circulation of softening portions of such thrombi.

Plate XXI. illustrates Inflammation of Dura Mater and Longitudinal Sinus. This case, like its three predecessors, one of laceration of the scalp, with subsequent osteitis, differs in the appearances, for the superior longitudinal sinus was found to be itself involved in the inflammation, and instead of merely containing a thrombus surrounded with fluid blood, had its walls lined with closely adhering inflammatory material. The differing result was accounted for by the fact that the diseased portion of bone was directly over the sinus. "Hence the implication of its walls by direct extension."

This fasciculus is somewhat larger than the preceding ones, containing five plates, and, as will be seen by the summary abstract above given, fully sustains the opinion already expressed of the value of the work in which Mr. Hutchinson is now engaged.

S. A.

ART. XLI.—*Medical Hints on the Production and Management of the Singing Voice.* By LENNOX BROWNE, F.R.C.S. Edin., etc. 8vo. pp. 48. London, 1876.

By the list of titles following the author's name, we should be fully warranted in assuming that his attention has been long and particularly given to the medical and hygienical aspects of vocal music. Senior Surgeon to a London Throat and Ear Hospital, Surgeon and Aural Surgeon to the Royal Society of Musicians, and Surgeon of both the Royal Albert Choral Society and Her Majesty's Italian Opera, his views should certainly command respectful consideration. The present work is an expansion, or re-arrangement, of an address delivered before a musical association.

It is proposed to consider, we are told, the laws of sound, as far as here necessary; the parts of the human instrument, with their functions; the best management of the controllable parts; the defects due to mismanagement; and lastly, hygienic hints.

The paragraphs upon the laws of sound are clear and satisfactory. The mechanism of vocalization seems to be generally very well described. From this judgment we must, however, except the account given of respiration. To say that the lungs may be inflated "by pressing them downward," is surely not a happy method of expressing the action of diaphragmatic inspiration. Of course, the entering air will press the lung downward and in every direction, in expanding it; but the process begins by the descent of the diaphragm, whose flattening dome pulls, perhaps, but surely does not press the lung downward. The description of costal or thoracic respiration, and of clavicular, seem hardly better. Nowhere is the simple fact brought out, that by muscular action the general cavity of the chest is increased, and that the lungs expand from the air being forced into them by the uniformly diffused atmospheric pressure.

The author's high estimate of the vast importance of the proper style of breathing, and practical hints for exercise and improvement in that function,

are sound and good. We believe he is right in recommending systematic practice in short but deep inspiration, and slow and even expiration, as capable of greatly benefiting the singer's powers.

Mr. Browne attributes not only to the pharynx, but also to the windpipe, a larger share in determining the pitch of sounds than has been generally believed. The latter organ is capable not only of some variation in length, but of a great change of tension, both by contraction of the muscular fibres which complete each of its imperfect rings, and by the stretching of the whole tube by the ascent of the larynx. That such altered tension of its walls will produce great variation of tone in a tube of fixed length has been experimentally proved. No doubt our author is correct in his surmise that the prevailing study of vocalization, with the laryngoscope, has led to a little tendency to ignore everything below the larynx. His high estimate of the share taken by the trachea in voice production seems to us reasonable, and almost necessary. No observable nor conceivable actions of the vocal cords are adequate to produce the existing phenomena. And even when we assign to the organs, surfaces, and cavities, above the larynx, a large range of action, we do not seem to have found cause sufficient for the effect. *A priori*, it would appear strange indeed, if a pipe so curiously and admirably adapted to propagate and multiply vibrations, of varying pitch, should have no other function than that of a conductor of wind. We fancy our writer is correct in assigning to each of the three regions very important functions in the formation of tones.

The chapter dealing with the hygienic, dietetic, and medical management of the voice, is generally judicious, and adapted to be of use to non-medical but singing readers. As in most writing of this sort there is a good deal of reference to "improper formation of tones," "vicious voice-production," etc. To tell a reader that these are the cause of his little throat-trouble, cannot much help him. Perhaps it is, at present, impossible to wholly avoid some such generalities.

B. L. R.

ART. XLII.—*Disinfection in Yellow Fever, as practised at New Orleans in the years 1870 to 1876 inclusive.* By C. B. WHITE, M.D. pp. 16. New Orleans, 1876.

THIS paper was submitted to the American Public Health Association, at Boston, last October.

The efforts at disinfection here described are founded upon the belief that the disease germs are not diffused through the air, but attached to surfaces, soils, and solid bodies. Also that the progress of the morbid cause from point to point is very slow—estimated at some forty feet per day. Houses were sprinkled with carbolic acid, one part in fifty. The ceilings and walls were reached by means of steam atomizers. Sulphurous acid and chlorine were sometimes used, but do not seem to have been preferred. Clothing was either boiled, or sprinkled with the carbolic solution.

Besides sprinkling the immediate vicinity of a case of fever, a circle of disinfection, exceeding in radius the calculated march of the infection, and of considerable width, is created in the same manner. It is not claimed that protection by this method is perfect, but that it does decidedly impede the march of the disease. If the first cases appear late in the season, the malady may be held in check till frost comes to put an end to it.

Quarantine regulations are protective, not so much by the detentions enforced as by the measures of disinfection employed. Sulphurous acid is blown into

the holds and between-decks of vessels, while carbolic acid is also freely used. Of late, a second fumigation has been employed after the discharge of cargo.

Many instances are here given of the striking manner in which measures of disinfection have arrested the further development of the epidemic when it has appeared in tenement houses or crowded neighbourhoods. The writer announces his faith in the practical control exercised over the disease by coal-tar acids.

B. L. R.

ART. XLIII.—*A Series of American Clinical Lectures.* Edited by E. C. SEGUIN, M.D., vol. 2, January to December, 1876. 8vo. pp. 340. New York, G. P. Putnam's Sons, 1877.

THIS handsome volume contains twelve lectures upon various subjects by prominent medical teachers.

In the first, Prof. Bartholow points out how the special physiological activities of certain drugs adapt them to antagonize febrile states. Starting with the idea that the over-production of caloric is at the back of other febrile symptoms, and noting the great importance of cool baths to abstract the excess of heat, he exhibits the anti-pyretic power of quinia, digitalis, aconite, veratrum, and salicylic acid. Each drug, however, has peculiarities of action, which must be considered in its use. Thus, digitalis, not desirable in typhoid because of irritation caused to stomach and bowels, precisely meets the indications in scarlatina. It strengthens and calms the heart-action, gives tone to enfeebled arterioles, assists the work of the kidneys, while at the same time reducing temperature. Pneumonia also, he believes, on theoretical and practical grounds, to be well treated by digitalis. Aconite, on the other hand, is adapted to purely sthenic diseases or stages. It lessens the force and frequency of the heart, and diminishes arterial tension, as well as reduces heat. Salicylic acid, not reducing temperature in health, must depend for its anti-pyretic power on its ability to arrest some morbid process. It is hence indicated where the presence of disease germs or ferments, is suspected.

Dr. Seguin presents several cases of acute melancholia, as an illustration of that form of the disease which can often be treated at home. He lays down with clearness the distinctions which should determine the physician, either at once to insist on hospital treatment, or to undertake the case at home.

In a somewhat elaborate lecture, Prof. Henry D. Noyes deals with the examination of the eye, and the diagnosis of its diseases, without the ophthalmoscope.

Prof. Geo. M. Lefferts urges upon all medical men the acquisition of the skill needed to use the laryngoscope. He gives minute directions for using this instrument and for overcoming such difficulties as are liable to be encountered.

Prof. H. B. Sands lectures at some length upon tracheotomy and laryngotomy.

The hypertrophied prostate, and its results, are admirably treated by Dr. Robert F. Weir.

Prof. William A. Hammond has a paper on the pathology and treatment of spinal irritation. An anæmic condition of the posterior columns of the cord, is thought to be the lesion characteristic of this diseased state. A vigorous argument is presented for the reality of the complaint, and for the rationality of ascribing the groups of symptoms to the pathological cause above named.

Dr. R. W. Taylor gives his views as to the treatment of eczema.

Other lectures here published treat of morbid nervous sensibility, dyspepsia, points in the surgery of childhood, and peripheral paralysis.

B. L. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *The Functions of the Corpora Quadrigemina.*—The chief functions which, in current physiology, have been attributed to the corpora quadrigemina are those which concern the perception of visual impressions, and especially the co-ordination of visual impressions with the motor apparatus of the organs of vision. But there are facts, which for the most part have only been ascertained of recent date, which associate these ganglia with the function of maintaining the equilibrium of the body, a function which has been hitherto referred chiefly, or only, to the cerebellum. An interesting contribution to our knowledge of the subject, by Dr. Kohns, of Strasburg, is contained in a recent number of Virchow's *Archiv*. He details a series of experiments which were suggested by the symptoms present in an interesting case of disease of these ganglia. The subject was a boy, aged seven, whose symptoms were an unsteady gait, resembling rather the walk of an intoxicated person than that of locomotor ataxy; a forward carriage of the head, and a tendency to fall forwards, and to the right; and slight divergent strabismus, due to weakness of both third nerves. These symptoms were accompanied with other unquestionable evidence of the existence of a cerebral tumour, and after death a cyst the size of a walnut was found in the median line of the cerebellum, just above the fourth ventricle, and connected with a small growth, the size of a cherry, situated in the posterior of the corpora quadrigemina, and in the adjacent medullary velum. The "nates" were by it completely destroyed, and the early weakness of the third nerves, together with the early ataxic symptoms, are believed by the author to show (taken in conjunction with the experimental evidence) that this was the earliest portion of the morbid change.

In only one other recorded case, described long ago by Serres, could Dr. Kohns find mention of loss of co-ordination as a prominent symptom of tumour of the corpora quadrigemina. But, as we have said, experiments on animals afford ground for regarding ataxy as a result of the loss of the function of these ganglia. The destruction of the optic lobes, the homologues of the corpora quadrigemina in fishes, was found by Cayrade to be followed by marked irregularity of movement. Goltz found that in frogs a similar effect was produced. Some of these experiments, and new ones, have been performed by Kohns. The observations of Goltz are fully corroborated. A frog, whose optic lobes have been removed, may be made to spring by a strong stimulus, but does so awkwardly, and falls heavily; and the creature, when quiet, rests on its abdomen, or, if the optic lobe on one side only is injured, supports itself by its legs on the other side, by its abdomen on the same side. In experiments on pigeons it was found that, after removal of the optic lobe on one side, a rotatory move-

ment of the head and body towards the side injured was produced. The gait of the bird was uncertain; it went from one side to the other; sometimes the feet would be placed one before the other, and the bird fall in consequence; on trying to peck it would fall forwards. The pigeons were quite unable to fly; if thrown into the air they fell heavily to the ground. These experiments exactly corroborate those obtained by Dr. M'Kendrick, of whose observations Dr. Kohts seems to be unaware. A very similar result was obtained on a dog; the left posterior tubercle was destroyed, and well-marked ataxy was produced, with inclination to fall to the left. Lastly, in Dr. Ferrier's recently published work, an account is given of a similar experiment on a monkey. Destruction of the nates caused, besides loss of sight, very marked disturbance of equilibrium. The animal sat in a crouching posture, swaying backwards and forwards, and, on trying to move, turned round, and showed a tendency to fall backwards. Electrical stimulation of the corpora quadrigemina threw no light on their co-ordinating function. It produced general tonic spasms, opisthotonos, and evidence of pain.

These experiments constitute good ground for the conclusion that the cerebellum cannot be regarded as the exclusive centre of co-ordination, and that the corpora quadrigemina must be associated with it. It is not easy to explain these results by the connection between the corpora quadrigemina and the cerebellum. But Meynert has given reasons for regarding the optic thalami and the corpora quadrigemina as reflex centres, and Nothnagel's experiments on guinea-pigs support this view. He found that voluntary movements remain after destruction of the optic thalami, but the limbs remain in whatever position they are placed. The functions of the optic thalami and of the corpora quadrigemina would thus seem, in more than one aspect, to be closely related, and their mutual relation and action affords a promising field for future observation.—*Lancet*, Jun. 6, 1877.

2. *The Development of the True Corpus Luteum.*—In the last two numbers of a series of papers on the migration of the human ovum and the development of the corpus luteum, Professor MAYRHOFFER, of Vienna, contends that the true corpus luteum of pregnancy, like the so-called false corpus luteum of menstruation, disappears and is replaced by another at short intervals, and that the doctrine hitherto accepted, that it has a duration of from nine to twelve months, is false. In support of this view he quotes a series of cases in which death followed the rupture of a tubal foetation of from seven to twelve weeks' duration, and in which the corpus luteum is described as communicating with the peritoneal cavity by an aperture not yet cicatrized. These cases are quoted, one from Luschka, two from Kussmaul, one from Tobege, and two from G. Braun. Although all the authors considered that the corpus luteum so described indicated the Graafian follicle from which the fertilized ovum had escaped, Prof. Mayrhofer contends that the aperture could not possibly have remained uncicatrized for so long a time as from five to twelve weeks, and that the corpora lutea seen in these cases were really quite recent ones, formed during pregnancy, and were only not recognized as such on account of preconceived opinions. He compares the description of their size and appearance with the almost identical account given by Benham of a corpus luteum found in a girl who had died during menstruation, which had all the anatomical characters of the true corpus luteum of pregnancy.

The author considers it by this means proved that corpora lutea are formed afresh from time to time during pregnancy, at any rate up to the end of the third month. There are no facts to demonstrate whether they continue to be formed every month during pregnancy, and have each of them a duration no longer than that of the corpus luteum of menstruation, or whether they are formed at longer and irregular intervals. Prof. Mayrhofer himself considers the former opinion more probable. A simple explanation is thus found for the fact that in women who had died during the course of pregnancy, or shortly after delivery, sometimes no corpus luteum at all is found. Of cases of this kind, which are not very rare, the author quotes one mentioned by Turner, and one by Otto. The accepted doctrine of the long duration of the true corpus

luteum has been founded upon the fact that during the second, third, and fourth month of pregnancy the corpus luteum is much larger than that found at a later period, and it has been naturally supposed that the smaller corpus luteum of the later months arose from the involution of the larger one of the early months. The facts, however, would be easily explained by supposing that the corpus luteum is renewed every month, or at irregular intervals, but that the stimulus to its development derived from the pregnancy is greater in the earlier than in the later months, or after delivery. The high degree of the development of the yellow cortical substance in the corpora lutea, which had not yet become cicatrized, does not prove anything as to their age, for it had been shown by Bischoff that in bitches at any rate a considerable development of the yellow substance takes place even before the rupture of the follicle.

A weighty objection may be raised to the author's doctrine on the ground that, in epidemics of puerperal fever, observers have looked for fresh corpora lutea in women who have died soon after delivery with a negative result. He answers this objection by saying that the day of delivery is generally rather more than 280 days from the commencement of the last menstrual period, and thus does not coincide with the tenth monthly epoch from that time, but falls a few days later. The tenth epoch may give the start to the process of labour, but it does not actually come on for a few days more. And a few days may so alter a corpus luteum that it could no longer be recognized as a fresh one. That sometimes, if not generally, an ovum is liberated near the time of delivery the author considers to be proved by a case which he relates, in which coitus, one week after delivery at full term, was followed by pregnancy.

The bearing of this doctrine upon cases which have been considered to show a migration of the ovum from one side to the other is obvious. The author derives a strong argument in its favour from the frequency of cases in which in tubal pregnancy, or pregnancy in one horn of an irregularly developed uterus, the corpus luteum has been found on the opposite side of the fœtation. This frequency is such that, on the assumption that the corpus luteum indicates the place whence the fertilized ovum was derived, we should have to conclude that migration of the ovum across the peritoneal cavity occurs almost as frequently as not, a supposition which is *a priori* very improbable. Prof. Mayrhofer's conclusion is that the corpus luteum does not indicate the ovary which produced the fertilized ovum, and that there is no evidence of any migration of the ovum from one side to the other. That the spermatozoa, however, may migrate from one side to the other through the peritoneal cavity is proved by the authentic cases in which there has been a uterus unicornis, the undeveloped horn being represented by an impervious fibrous band, and in which fœtation has nevertheless taken place in the ovary, Fallopian tube, or outer part of the uterine horn on the undeveloped side.—*Obstetrical Journal of Great Britain*, January, 1877, from *Wiener Med. Wochenschrift*, Nos. 18 and 19, 1876.

3. *On the Quantitative Estimation of Urea.*—In a notice of the simple process of Drs. RUSSELL and WEST, for estimating urea, of which an account was given in the number of this Journal for April, 1875, p. 531, it was stated that the hypobromous solution decomposes in hot weather more quickly than was expected, and that it is very important that it be quite freshly prepared.

Drs. Russell and West draw especial attention (*Practitioner*, Jan. 1877) to this, and suggest that the solution be prepared in the following manner: A solution of caustic soda is made in water in the proportion of 100 grammes of solid caustic soda to 250 cc. of water. This solution may be made in large quantities, for it will keep good for a very long time. To part of this solution bromine is added in the proportion of 25 cc. to every 250 cc. of caustic soda solution at the time it is required for use.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

4. *Action of Silver on the Muscular and Nervous Systems.*—In a series of experiments on this subject, Cuneo (*Giornale Veneto di Scienze Mediche*, 1876) used a combination of one part of chloride of silver, three of hyposulphate of soda, and thirty of distilled water; chloride of sodium and hyposulphate of silver being formed. The solution had a sweet taste, followed by a somewhat metallic after-taste. Administered in this way, silver, while its effect is obtained as far as is useful, irritates neither the skin nor the mucous membrane. Injected subcutaneously, it produces slight inflammation and oedematous swelling of the areolar tissue; but it does not coagulate the blood, and is easily absorbed.

The following are some of the conclusions at which M. Cuneo has arrived.

Silver acts on the sensory nerves, and through them on the posterior columns of the cord. It first stimulates them and increases sensibility to pain, raises reflex excitability, and extends its action to the motor portion of the cord, producing tetanus and increased muscular tonus. It increases muscular irritability, and paralyses secondarily the sensory nerve-centres, especially the respiratory centre. At length it annihilates reflex excitability, respiration and circulation cease, and the heart remains in a state of diastole.

These results, according to Dr. Cuneo, show the inefficacy of silver in the diseases for which it has hitherto been in repute—myelitis, paralysis agitans, and locomotor ataxy. Where there are softening or induration, proliferation of connective tissue, and destruction of nerve-elements, and where the muscular tonus is weakened, no good action can be expected from a medicine which itself produces these conditions.

It can only be used with benefit in those cases of epilepsy which depend on excessive irritation of the spinal cord, while in those which arise from anatomical lesions it has no effect.

In hysteria, silver is inoperative as a remedy; in chorea, on the other hand, it is beneficial.

Excellent results are to be expected from silver in nervous asthma, in cases attended with spasm of the inspiratory and bronchial muscles, since it reduces the irritability of the respiratory nerve-centre.—*Lond. Med. Record*, Feb. 15, 1877.

5. *Toxic Effects of Salicylic Acid.*—Professor ABELIN, of the Hospice des Enfants Trouvés at Stockholm, has published some startling results of the treatment of various diseases in young children by salicylic acid. These results are recorded with great candour in a recent number of the *Nordiskt Medicinskt Arkiv*. They are worthy of note by way of caution in the use of salicylic acid, although we apprehend that no English physician would prescribe a dose of twelve grains of this remedy for a child at the breast.

The rapidity with which salicylic acid may be detected in the urine is well known, and we are now also aware of the liability to adulteration of it with carbolic acid. In none of Professor Abelin's cases is the urine recorded as being olive-coloured, but the frequency of albuminuria is very important.

In Professor Abelin's clinic, salicylic acid was given as an internal antiseptic on a large scale in cases of diarrhoea with offensive stools. It was not observed to have any beneficial effect upon such cases, except to modify to a slight degree the offensive odour; and even in this respect it was found inferior to other remedies. In some of these cases nephritis occurred during the exhibition of the drug.

As an antipyretic, it produced a definite effect in a great number of cases, but, when given in a dose large enough to produce a lowering of temperature from 20° to 40° , was badly tolerated, and produced serious symptoms and great depression. In a dose of 0.8 to 1 gramme (i. e. about $12\frac{1}{2}$ grains to $15\frac{1}{2}$ grains) it acted in an infant at the breast as a violent poison. It has also a very irri-

tant action on the mucous membranes of the mouth and pharynx. This action prevents the child from swallowing and sucking. It produces rapidly a lowering of more than 5° Fahr., a considerable amount of collapse, irregular respiration, altered skin functions, and a strong fluxion of blood to certain viscera. The following case is given as an example: A child at the breast, aged four months, up to that time healthy, became febrile from vaccination. Temperature in the morning 104°. Dejeeta natural. Three vaccine bullæ beginning to suppurate.

Ordered fifteen grains and two-fifths of salicylic acid, to be divided into three portions. A good part was lost in struggling, so that not more than about twelve grains were actually taken. The child became rapidly restless, and unable to suck. The mouth and pharynx became coated with a thin white deposit. The child could not swallow; the pharynx got full of mucus. Respiration was difficult and rattling; there was obviously an obstacle to the entrance of air into the larynx. The face looked pinched; the eyes sunken. The temperature fell rapidly, and in two hours it was only 98.6°. The child got rapidly worse; the pulse small and unequal—160; face pale-yellow. There was inability to swallow and to utter a sound; and extreme restlessness.

It was only after persevering for ten hours with warm baths and cold douches, inhalations of steam to which carbonate of ammonia was added, and bathing with musk and opium, that there was a subsidence of these symptoms.

In two days' time there was pneumonia at the right base, and in four days at the left base. The urine was strongly albuminous; it deposited a crowd of lymphoid cells and hyaline casts.

The child now became able to swallow, but not to suck. It was treated with quinine, musk, wine, and enveloped in a cold wet sheet. The temperature did not exceed 100.2° Fahr. In proportion to the progress of the hypostatic pneumonia and the nephritis, the collapse and somnolence increased, and the child died on the tenth day after the administration of salicylic acid.

At the post-mortem there was emphysema in front, pneumonia behind. The kidneys were enlarged, capsule stripping easily; on the surface of one there were numerous extravasations. There was also hyperæmia of the pyramids, and the tubules of the cortex showed swollen and granular epithelium cells. In the pelvis of one kidney there were several ecchymoses.

To sum up, Dr. Abelin is of opinion that in young children the use of salicylic acid must be very restricted. In a dose of twelve to fifteen grains it acts as a corrosive poison; in smaller quantities it lowers the temperature without acting beneficially on the course and symptoms of the malady.—*Med. Times and Gaz.*, Jan. 13, 1877.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

6. *Phosphorus in Leucocythæmia*—The discussion which occupied the last meeting of the Clinical Society, on the use of phosphorus in leucocythæmia, can hardly be regarded with unmixed satisfaction. Those who entertained hopes of a verdict favourable to the use of phosphorus, or who had been led to believe that a remedy had at last been discovered, which, if it could not eradicate, might at least arrest, the disease in question, have been doomed to disappointment. It is true that exception may be taken to the title which we have adopted for the debate, since other matters of equal or greater importance were also discussed, but the main outcome consists in the decision on the phosphorus question, and to that we shall chiefly refer.

The history of the employment of the drug came out very clearly, and we may briefly trace it as narrated by the several speakers. It is one of considerable interest, since it affords an example of the fallacies which beset the path of the scientific therapist, and the evils in this, as in all other scientific investigations, of rash speculation and hasty generalization.

The originator of the treatment, so far as we can discover, was Dr. Broadbent, and no one will wish to dispute his claim to priority. The case in which he first employed it was published in the *Practitioner*, for January, 1875. It was one of splenic leucocythæmia, in which the increase of white blood-corpuscles was not so great as usual. Improvement occurred under the use of phosphorus, but as the boy had an attack of what was believed to be inflammation of the spleen whilst in the hospital, it was questionable whether the decrease of the leucocythæmia might not have been due to this rather than to the drug. The sequel of the case is not known. The next case was that under Dr. Wilson Fox, published in our columns on July 10th, 1875,¹ and it was this which undoubtedly gave the impulse to the employment of phosphorus. The improvement in this case was certainly remarkable, an apparent cure resulting. But even in this, the most successful case as yet recorded, the sequel, as narrated by Dr. Fox, has not confirmed the idea of permanent cure, the patient having died in the autumn of the present year, after a not exceptionally prolonged course. It was allowed by Dr. Fox that cases of apparent recovery, though very rare, were on record, and that therefore the proof in favour of phosphorus was incomplete.

Since that time phosphorus has been tried in a number of cases of splenic leucæmia, several of which have been published, and in none of them, so far as we are aware, has any benefit resulted. The cases reported by Dr. Moxon at the Clinical Society last year, and by Sir W. Jenner at the recent meeting, afford conclusive evidence that, at least in many cases, phosphorus has not the slightest beneficial effect, either upon the proportion of white blood-corpuscles, or on the general course of the disease, and that it cannot therefore be regarded as in any sense a specific.

But how was it that it ever came to be regarded as of so great value, and whence arose the controversy which the discussion has for the present set at rest? Dr. Broadbent related with great clearness the views which had led him first to employ phosphorus. As is well known, phosphorus, in poisonous doses, produces fatty degeneration of the tissues, especially the glandular secreting cells and muscular and nervous tissues; and in smaller continued doses its action may possibly be analogous. Again, phosphorus has a close relation with arsenic in its chemical affinities, and arsenic is well known to have a very powerful medicinal effect in promoting tissue-change, and is employed for that purpose in many diseases. Struck with these facts, Dr. Broadbent thought that phosphorus should act beneficially in leucocythæmia, in which there appears to be excessive and, if we may use the word, eacoplastic action in blood-formation. So far we may agree with Dr. Broadbent, and the value of his iatro-chemical speculation may be allowed as an hypothesis, but nothing more. But an hypothesis is a good servant but a bad master. One doubtful case should be of no value as a proof either of the accuracy of the theory or the value of the remedy; nor could any really scientific decision be arrived at until the trial of the drug had been made in a number of cases under different conditions, and all possible sources of error eliminated. This until recently has not been done, and it is only now that we are enabled to judge of the value of the treatment. We might indeed, contest the original hypothesis on *a priori* grounds, both chemical and pathological. So far as the chemical basis is concerned, fascinating as it looks in theory, it will scarcely be found to hold water. Similar considerations would apply with even more force to antimony, which has a far closer affinity with arsenic, both in its chemical relations and its physiological and toxic action, than phosphorus possesses. Again, the importance of the entrance of phosphorus into the blood as such, on which Dr. Broadbent lays such stress, would lead to the view that its action must be very different from that of arsenic, which, introduced in almost any form of combination, exerts similar effects. Nor do we believe it to be probable that phosphorus could enter the blood uncombined. But another element of uncertainty, which should have led to a more rigorous investigation, exists in the great doubt as to the true pathological nature and relation of

¹ See Monthly Abstract of Med. Science, Oct. 1875, p. 440.

splenic leucocythæmia, and even, as the discussion has shown, as to what cases are to be classed as such. As Dr. Moxon justly urged, Dr. Wilson Fox's case would not be regarded as a typical case by many, and even Dr. Broadbent's case was one admitting an element of doubt. But Dr. Broadbent takes refuge in a yet wider generalization, and, failing leucocythæmia, falls back on lymphadenoma as a disease likely to be benefited by phosphorus. Nor does he rest here, but regarding essential anæmia, intermittent hæmaturia, and Addison's disease, as diseases having a common basis with leucocythæmia and Hodgkin's disease, and essentially due to a similar defective nutritive action, he would apply this same treatment in them, with equal anticipations of benefit. But to take such a standpoint as this is to throw back the science of medicine at least fifty years and to confuse together diseases which, so far as we know, are distinct in their morbid anatomy, clinical history, and all other essential features. If we allow such vague generalities to govern our views of disease, we can expect no precision either in diagnosis or treatment, and we might, indeed, fall back on the nihilism of one of the speakers. It may be that we know as yet but little of vital actions, but let us at least hold fast what we do know, as a ground for future advance.

The course of the debate, indeed, clearly indicated the necessity for increased rather than diminished accuracy of definition of the diseases in question, and for a clearer understanding of the terms employed in their description. It is evident that a very wide discrepancy exists between the views entertained, not only as to the pathological nature and relations of lukæmia splenica, leukæmia lymphatica, and Hodgkin's disease, but as to their symptoms and diagnosis. Some, indeed, deny altogether the existence of lymphatic leukæmia, and others express great doubts as to its occurrence. On this subject we shall not now enter, but shall limit ourselves to the inquiry as to how far phosphorus has proved useful in the treatment of the two latter, taking them together. Dr. Broadbent mentioned five cases, in four of which he had tried phosphorus. In one the treatment was as yet hardly commenced; in another, an advanced case, no good resulted. In two others, one believed to be a case of the disease in an early stage, another more advanced, great good seemed to be done. On the other hand, Dr. Moxon, who has tried it in several cases, and Dr. Duckworth, whose experience has been considerable, have seen no beneficial result in any case. In Dr. Greenfield's case no effect was produced by it, and the same may be said of Dr. Goodhart's. The case reported by Dr. Gowers alone seemed to lend countenance to the view that phosphorus induced a diminution of the disease, though, if this view be accepted, the other coincident and fatal degenerations appear to have been due to the drug in equal proportion. But in several respects this case was so exceptional, and the apparent results of the treatment so contradictory to ordinary experience, that we are not surprised that the majority of the speakers hesitated to accept the views so ably urged by Dr. Gowers. So far, then, as these allied diseases are concerned, Dr. Broadbent's cases seem to stand alone in their apparent success. Yet we do not despair of finding some remedy which shall succeed when this has failed, nor can we but hope that the powerful physiological and toxic properties of phosphorus will yet be applied in some diseases of equal danger.

We may hope, at least, that this interesting episode in the history of therapeutics will lead in the future to a more careful and rigorous investigation of the action of novel remedies, and a less ready acceptance of results based on a limited experience.—*Lancet*, Dec. 16, 1876.

7. *Bromide of Arsenic in the Treatment of Epilepsy*.—Dr. T. CLEMENS, of Frankfort-on-the-Main, states, in the *Allgemeine Medicin Central-Zeitung*, No. 42, 1876, that he has employed bromide of arsenic for twenty years in the treatment of diseases of the nervous system, especially epilepsy, and that he has obtained astonishing results with it. He uses a solution, of which he gives one or two drops in a glass of water once, or, if necessary, twice daily. He says that these doses may be given for months and even years, without producing any of the unpleasant effects of a long-continued arsenical course. All his cases of epilepsy have been markedly improved by the bromide of arsenic, but

in only two cases has it produced a complete cure, *i. e.* entire freedom from attacks. In many cases of incurable epilepsy, with idioey and deformities of the skull, the fits were reduced in number from twenty in the twenty-four hours, to four or even two, a result that has been obtained by no other treatment in similar cases. He has found the action of the bromide to be greatly assisted by a liberal meat-diet and free exposure to air by day and night. Unlike bromide of potassium, this remedy does not require to be given in increasing doses; and as is the case with arsenical preparations, it often increases the bulk of the body. Dr. Clemens has employed the following formula since 1859, and thinks that it ought to replace Fowler's solution, which is irrational in its composition and uncertain in its action. This solution improves with time; the chemical union of the bromine with the arseniate of potash becoming more and more perfect. It is made by boiling a drachm each of white acid and carbonate of potash in half a pint of distilled water, then adding sufficient distilled water to make twelve ounces, and finally two drachms of pure bromine. After standing for a sufficient time, the result is a colourless solution, which, in Frankfort, is known as *Liquor Arsenici Bromidi Clementis*.—*London Med. Record*, Feb. 15, 1877.

8. *Spasmodic Tabes Dorsalis*.—M. ISADORE BÉTOUS (*Thèse de Paris*, 1876) under this name describes a rare affection of the nervous system, already noticed by Erb, and to which M. Chareot has devoted an interesting lecture. The dominant character of this new disease is spasm and contracture, at first slight, but which become more and more pronounced, and soon reduces the patient to complete debility. Mobility is alone affected in these patients, the reverse being the case with ataxies in whom various troubles exist. It is rational to suppose that the anatomical lesions occupy the lateral columns, but the lack of an autopsy up to the present time prevents any localization of the alteration in the cord.

The evolution of spasmodic tabes dorsalis is eminently slow; it may be divided into three periods, characterized each by special symptoms:—

1. Gradual paresis of the inferior limbs, accompanied rarely with painful symptoms; no disorders of sensibility.

2. Contracture invading the same lower limbs and affecting the progressive in a peculiar manner. Spontaneous and induced tremors, the former constant.

3. The paresis and contracture attack the superior members; this condition may persist, improve, or disappear. The contracture of the inferior members increases so far that progression generally becomes impossible; it sometimes affects the abdominal muscles.

Sensibility is always preserved intact, spontaneous painful sensations are rare. There is neither muscular atrophy, nor rectal, vesical, or genital disorders. The general state of health is good, the cerebral functions are accomplished normally.

This affection should not be confounded with transverse myelitis. The latter begins brusquely, is accompanied with paraplegia, urinary disorders, anæsthesia, and only in the late stages of the disorder do we see contracture and tremors. It is the same with myelitis by compression and locomotor ataxia, which differ essentially from spasmodic tabes. Multiple sclerosis resembles this disease somewhat in paraplegia of the lower limbs, and the tremor, but we never meet in this affection with the tremor of the members, the embarrassment of speech, and the disorders of intelligence, and of the centres which are the regular thing in multiple sclerosis.

Amyotrophic lateral sclerosis is, of all spinal affections, the one that most resembles spasmodic tabes, but the muscular atrophy of the superior members, never met with in tabetics, suffices to distinguish it.

The progress of the disease is slow, and it does not endanger life.

Treatment has so far been ineffectual; still the use of the ascending current and hydropathy are to be advised.—*Journal of Nervous and Mental Diseases*, January, 1877.

9. *Aconitia in Tic Douloureux*.—At a meeting of the Société de Thérapeutique (*Gaz. Hebdomadaire*, February 9), Prof. GUBLER drew attention to a symptom, which is little known, consequent on the use of aconitia. A patient, a very intelligent man, who on account of an obscure nervous affection, accompanied by amblyopia, had been taking aconitia in half-milligramme doses, found, two hours after beginning a new mixture, which was probably more active than the preceding one, that he was the subject of a strange uneasy præcordial sensation, accompanied by irregular palpitations of the heart—hearing, as he said, a triple sound in it. Prof. Gubler was at first inclined to believe that there was a reduplication of the second sound, but he had not seen the patient while these cardiac disturbances continued. In a young girl suffering from disease of the heart, whom he had subsequently seen, the aconitia had to be left off in consequence of the cardiac disturbances which it caused. These cases reminded him of the observations made by Hottot and Liégeois, who found irregular action, and then paresis, of the heart were induced by aconitia; and they were of opinion that it induced paralysis of certain portions of the bulb. The conclusion to be drawn from all this is, that aconitia should not be given to persons suffering from affections of the heart.

Still, Prof. Gubler thinks that too much distrust is often exhibited with regard to aconitia, which is in nowise dangerous when used prudently. The aconitia of Hottot and Liégeois is excellent, and that of Duquesnel possesses great power, so that a quarter of a milligramme may suffice as a dose. It is a bad plan to administer it in pills or granules, for it may happen that, encouraged for a certain time by the nullity of their effects, we may thus be led to give a mischievous dose. This nullity may result from an absence of absorption; but with a solution this does not occur. We may give half a milligramme of the nitrate of aconitia for a dose, which represents about a quarter of a milligramme of aconitia. With Hottot's aconitia, Prof. Gubler has only on one occasion met with an accident, the patient having taken one milligramme and a half in sixteen hours; and in that case there was loss of consciousness. He is therefore not afraid of employing this heroic remedy, especially when he is able to say that *he has never known a neuralgia of the fifth pair, even tic douloureux, resist aconitia*. Some years since he saw a patient who had long been the victim of obstinate trifacial neuralgia, for the relief of which Nélaton had excised all the nerves affected. This only gave temporary relief, and he was about to remove the Gasserian ganglion, as the man declared he would commit suicide, when, by the advice of Debout, Hottot's aconitia was tried, and after five milligrammes had been taken the patient suffered no more. In another patient, who had suffered agonies night and day for three months, six milligrammes completely dissipated the pains. The remedy was then omitted, and the neuralgia reappeared, again to yield with the resumption of the aconitia.

We must not, however, expect such success in other forms of neuralgia as we meet with in the trifacial. The aconitia seems to act on the nervous tissue itself, but it is especially beneficial in the congestive forms. Of course the organic lesions, which are often the cause of obstinate neuralgia, pursue their course; but although the *tic douloureux* may be due to a lesion of a progressive nature, Prof. Gubler is of opinion that, if we can succeed in relieving for a long time the functional disturbances, a cure may be effected. In a general way, it may be stated that many diseases which at last present organic changes are at first of trifling importance; the neurosis in them engenders the lesion. Locomotor ataxy, for example, is at first a neurosis; and it is only at a later period that atrophy of the nervous tissue takes place. Nutrition is at first affected, the lesions being only secondary. It is on the section of a motor nerve that muscular atrophy supervenes, cellular tissue filling up the vacuities. M. Moutard-Martin agreed in the opinion that the progress of lesion may be arrested by acting on the pain; and in this way he has definitively cured cases of *tic douloureux* by repeated injections of morphia.—*Med. Times and Gaz.*, Feb. 17, 1877.

10. *Carbolic Acid Spray in Catarrhal Diseases of the Respiratory Organs.*—Dr. MORITZ, in a communication to the Medical Society at St. Petersburg (*St. Petersburg Medicin. Wochenschrift*, Nov. 11, 1876), states that during the spring of last year he used carbolic acid spray with benefit in catarrhal diseases of the respiratory organs. Having had much to do with carbolic acid, and especially the spray, he noticed that the bronchial catarrh with which he was frequently troubled did not occur, or that, if it began, it was soon arrested. A colleague of his, Dr. Assendelft, made the same observation. Dr. Moritz used the spray of a two per cent. solution of carbolic acid. He first tried it on two children in whom the commencement of whooping cough was suspected. After the remedy had been used two days, the slight catarrh which was present came to a stand-still, and in a few days disappeared. In several children with measles, the cough was diminished, and the nights were more quiet after the use of the carbolic acid spray. In two surgical patients also, whose lungs were in a suspicious state, the cough entirely disappeared during the frequent use of the spray. On the other hand, it was ill borne by two phthisical patients, one of whom had extensive cavities in the lungs. He explains the action of carbolic acid by supposing that many cases of catarrh are, during a certain stage, of infectious, perhaps parasitic nature. In the discussion on the paper, Dr. Von Mayer said that, if bronchial catarrh were infectious, this must be explained rather on chemical grounds. Dr. Wulff thought that many cases of catarrh might to some extent be parasitic. Dr. Lelwess had found solution of carbolic acid very useful in cough, in the form both of inhalation and of injection. Dr. Masing had found excellent results from the carbolicized spray in a very obstinate case of whooping cough of three months' duration. Dr. Schmitz had remarked the cessation of the attacks of bronchial catarrh to which he had been liable, since he had had much to do with the carbolic acid spray.—*London Med. Record*, Feb. 15, 1877.

11. *Subcutaneous Injection of Carbolic Acid in Phthisis.*—Dr. SCHNITZLER (*Wiener Med. Presse*, Nos. 32 and 35, 1876) was led by observing the favourable results of subcutaneous injection of carbolic acid in an obstinate case of diphtheria, to try it in other diseases attended with febrile symptoms, especially phthisis. During June and July of last year he injected carbolic acid subcutaneously in more than one hundred cases of consumption. The injections were made once, and in a few cases, twice daily; one or two charges of a Pravaz's syringe with a one or two per cent. aqueous solution of carbolic acid being used. The injections were generally made in the back and chest, more rarely on other parts of the body. He has also used a Leiter's syringe, which contains one gramme: thus injecting one or two centigrammes of carbolic acid at each dose.

In most of the cases, the result was a reduction of the fever; the temperature fell, the pulse became slower and stronger, and the breathing generally more tranquil; the feeling of weariness and weight in the limbs was often remarkably relieved, and, after repeated injections, the night sweats were diminished. In some cases, the injections appeared to have a palliative effect on the cough and expectoration; but this was not constant.

In many patients the injections were continued almost without interruption from two to four weeks. They generally agreed in stating that they felt much better after the injection, and especially that they had less pain; some, however, were not again seen after one or two injections.

Dr. Schnitzler is not as yet able to explain the action of the medicine; but he considers that the incontestable effect on the fever renders it possible that the carbolic acid may exercise a beneficial result on the whole course of the disease. He considers that the carbolic acid injections are at least as effective against hectic as quinine, if not more so.

Dr. Schnitzler has never met with any untoward results from the subcutaneous injection of carbolic acid, which he has employed in several hundreds of cases. It is not much more painful than the injection of morphia; but the burning sensation at the point of injection sometimes lasts longer, and in some cases there were itching and pricking at the spot for some hours. Now and

then there was slight inflammation, which soon disappeared; in one case only there was more swelling, which was reduced in a few hours by cold applications. —*London Med. Record*, Feb. 15, 1877.

12. *Atropia in the Exhausting Night-sweats of Phthisis.*—In an interesting article on anhidrotics (agents which check profuse perspiration) Dr. J. MILNER FOTHERGILL, (*Practitioner*, Dec. 1876) thus speaks of the value of atropia:—

I have no hesitation in saying that the use of this agent completely changes the aspect of many cases of pulmonary phthisis. For the arrest of the exhausting night-perspirations of phthisis, belladonna is as potent as digitalis is in giving tone to a feeble heart. It is quite true that neither is very effective in the last and final stages of disease, for indeed nothing is very potent then; but in the early stages the action of each is very pronounced. In the night-sweats of spreading caseous pneumonia, the administration of belladonna is followed in almost all cases by a decided arrest of the flux; and in many cases the arrest of this flux is accompanied by immediate improvement. A few of the worst cases only go on entirely unaffected. In the colliquative sweats of the last stage, when the lung is breaking down extensively, the influence exercised is small; still it usually palliates the drain to some extent even then. The loss of the salts of the body in profuse perspiration quickly exhausts the system; and the arrest of this drain commonly permits of the other measures being effective in improving the general condition. While the loss goes on unchecked improvement is impossible.

To produce these effects it is necessary, however, to use larger doses than those spoken of by Dr. Ringer. He speaks of from $\frac{1}{80}$ th to $\frac{1}{100}$ th of a grain of atropine given hypodermically; and of from $\frac{1}{80}$ th to $\frac{1}{40}$ th, by the mouth. I have had no opportunity of trying the hypodermic method; but as to the dose given by the mouth, I usually commence with $\frac{1}{12}$ th of a grain, and go up to $\frac{1}{8}$ th; the latter dose rarely failing. I am inclined to think that in Mr. William Murrell's sixty cases referred to by Dr. Ringer the large proportion of failures (from 8 to 10 per cent.) was due to some extent to his not pushing the drug. When $\frac{1}{12}$ th is ineffective, I prescribe $\frac{1}{8}$ th; if next week that has failed, $\frac{1}{6}$ th is ordered. This usually produces the desired effect, after which smaller doses will maintain it, and may be continued. For instance, in one case at Victoria Park Hospital, on July 22d, $\frac{1}{8}$ th was ordered; the patient at the same time taking a mixture of iron and strychnia, with \mathfrak{Dij} of sulphate of magnesia, three times a day. This did well for a week or two, when the night-sweats returned, so that on August 19 the dose was increased to $\frac{1}{6}$ th. The effect of this was pronounced, and on the 26th it was reduced to $\frac{1}{8}$ th again; and on September 9th to $\frac{1}{12}$ th, which dose keeps the sweats down satisfactorily.

As to the number of cases I have kept no account; but during the week, July 16th to the 25th, this year, an intensely hot week, 74 patients, out of a total of 300, were taking belladonna at bedtime at Victoria Park Hospital alone. At the West London Hospital I had at least 30 more during the same week. Thus I had 100 at one time under the influence of belladonna. Consequently my experience of the use of belladonna in the treatment of hidrosis is not a very limited one. It enables me to say that belladonna or atropine may be freely used without apprehensions as to any toxic effects appearing. Even with $\frac{1}{12}$ th of a grain of atropine every night, the patients do not complain much; some dryness of the throat and a little indistinctness of vision being all, while all prefer these to their dreaded sweats. These effects wear off in a day or two after the drug is discontinued, or even the dose reduced. I have not yet seen any alarming symptoms produced. This I attribute to the gradual increase of the dose; and I have little doubt that if $\frac{1}{12}$ th were given at first, many cases would show marked toxic symptoms. But where there seems a tolerance of the drug, the dose must be increased; and may safely be increased. Belladonna is an agent which produces marked toxic symptoms long before a fatal dose is reached; much the same as is the case with strychnia. It is not a treacherous drug by any means; and may be used with confidence. Dr. Charles Kelly (*Practitioner*, March, 1873) found that in the treatment of whooping-cough, half an ounce of the tincture in twenty-four hours could be

safely taken by children of three or four years of age. Without advocating such large doses, until a further experience demonstrated their safe use, I may say that from $\frac{1}{2}$ th to $\frac{1}{4}$ th of a grain of atropine, and from 20 to 35 minims of the tincture of belladonna are quite safe doses. The atropine may be given in pill; while the tincture of belladonna is best combined with dilute phosphoric or sulphuric acid (M_{xv}), and may be taken at bedtime or when the patient awakens about two or three in the morning. It is my intention to try larger doses for the relief of the colliquative sweats of advanced phthisis. As to the actual facts of toxic symptoms of the seventy-four cases mentioned, one had dryness of the throat, a second had some derangement of the pupils, and a third some indistinctness of vision on getting out of bed in the morning, which quickly wore off.

If any doubts existed as to the causal associations betwixt the administration of the belladonna and the arrest of the hidrosis, they are dissipated by the fact that on omitting the medicine the perspirations returned—as when the patients neglect to attend the hospital, and so are without their medicine. On again taking the medicine the sweats disappear. This puts the matter beyond doubt or cavil, especially when combined with Ringer's experiments, which are well worth perusal.

A few words now as to the practical use of belladonna in the treatment of phthisis. The most common cases are those where a slowly-spreading caseous pneumonia involves one lung to the second, third, fourth, or fifth rib. There is a fast pulse, over 100, a temperature over 100° Fahr., cough, profuse night-sweats, and rapid wasting. It is in these cases that the utility of belladonna is so well seen. As soon as the profuse night-sweats are checked, the patient begins to pick up; the appetite returns; food is better assimilated; the sleep is refreshing; and the mind is much relieved. In fact the arrest of the drain of salts by the hidrosis at once inaugurates an improvement; and the good effects of the other measures resorted to are not lost, as before. It is well, at the same time, to give the patient tonics, iron with strychnine or quinine, together with mineral acids; good food in liberal supplies, and cod-liver oil if the stomach will carry it. The association of night-sweats with debility is notorious. Fuller recommends some alcohol to be taken at bedtime invariably. When the morning sleep is deep the sweats are most profuse, and are "to be in part avoided by keeping awake, which is often done purposely." (Marshall Hall.)

Finally, my experience of pulmonary phthisis is not depressing, but rather encouraging, especially in its early stages. It has been much more cheering since I have employed belladonna extensively. In some cases where the belladonna does not act as potently as usual, oxide of zinc with hyoscyamus is found to be effective. In those cases where the cough at night prevents sleep, opium may be given with belladonna. The belladonna prevents too great action on the sudoriparous glands, and the combination is very effective. To prevent too much action in the intestinal canal, it is well to give the neurotics in pill with aloes. A pill of morphia ($\frac{1}{2}$ a grain), atropine $\frac{1}{2}$ th in three grains of pil. al. et myrrh., is used by me at Victoria Park, and acts satisfactorily. It is not always an easy matter to avoid the undesirable effects of therapeutical agents; and when they must be resorted to, it becomes necessary to provide against and ward off these effects by suitable additions and combinations. There are no serious drawbacks to the use of belladonna, and the dry throat and indistinctness of vision are usually borne by the patients without complaint.

The arrest of the profuse and exhausting night-sweats is usually followed by more or less immediate improvement; and belladonna very rarely fails to achieve this arrest. The systematic use of anhidrotics must grow with further acquaintance with them, and especially with belladonna; and the public, as well as the profession, are under a deep debt to Dr. Ringer, which I trust this paper will do something towards demonstrating. Belladonna seems to be a specific anhidrotic, acting on the sudoriparous glands as it does on the submaxillary gland. Heidenhain (*Pflüger's Archiv*, vol. v. p. 40) indicates that belladonna may be found to affect other glands than the submaxillary by acting on their secreting nerves. Such seems to be its action in the arrest of hidrosis; which it effects

when applied locally as well as when given by the mouth or injected hypodermically.

13. *Cheyne-Stokes' Respiration.*—The peculiar rhythmical irregularity of breathing known as "Cheyne-Stokes' respiration" is so very striking and unique, and the difficulties surrounding an attempt at its explanation are so very numerous, that any important contribution toward its study is most welcome. A man suffering from aortic incompetency, with considerable atheroma of the peripheral arteries, and presumably of the aorta also, exhibited this symptom in an extremely well-marked form during his residence in the Hôtel Dieu at Lyons, from September 30 to October 28, 1876, when he died there. His case was watched throughout with considerable interest by M. Biot, who has published its details, with some very valuable comparative tracings of the pulse and respiration, in Nos. 50 and 51 of the *Lyon Médical* for 1876. (See *Monthly Abstract of Medical Science*, April, 1877.) These supply, for the first time, a permanent register of the relative frequency of the beats of the heart during the ascending and descending parts of the respiratory cycle, the dyspnoëic and apnoëic periods respectively. We find that such exact records do not always accord with the previous statements of most writers on this phenomenon, and of course they are of primary significance in the construction of any hypothesis explanatory of its mechanism. Cheyne, in 1818, first drew notice to this peculiarity of respiration in these words: "For several days his breathing was irregular; it would entirely cease for a quarter of a minute, then it would become perceptible, though very slow; then by degrees it became heaving and quick; and then it would gradually cease again. This revolution in the state of the breathing occupied about a minute, during which there were about thirty acts of respiration." In this case fatty disease of the heart was very marked, whilst the valves were healthy, and the aorta was "studded with steatomatous and earthy conerctions." No general attention, however, was directed to the peculiarity and striking character of this symptom until, in 1846, Stokes urged its significance as a sign of fatty degeneration of the heart, believing that its presence was pathognomonic of this affection, and that it always betokened a fatal and not far distant termination. That it did not necessarily depend on fatty degeneration was soon shown by Dr. Seaton Reid, who described a case in which the muscular structure was healthy, whilst the mitral and aortic valves were both incompetent, the left ventricle was hypertrophied, and the aorta dilated and atheromatous. From a study of this and some similar cases described by other writers, or observed by himself, Dr. Hayden has come to the conclusion that the first portion of the aorta has always undergone such a change as to lose its elasticity and become dilated. But we fail to see why this must be a primary necessity any more than fatty degeneration, for cardiac angina, which, in its essentially neurotic character, is more or less allied to this abnormal respiration, is found with either change alone, with both together, or independent of both. The number of autopsies in these cases is not sufficient to generalize from, and we hope that all such will be recorded in future. In M. Biot's case a post-mortem examination was objected to, so that no evidence as to the condition of the heart and aorta, except the valvular lesion as inferred from the bruits heard during life, is available. Dr. Hayden found the cardiac beats and pulse unaltered in rate and character during the respiratory changes in rhythm and force; but this is directly at variance with the observations of Dr. Little and M. Biot, both of whom found the cardiac pulsations remarkably accelerated during the period of apnoea, and slowed during that of dyspnoea. In the example at Lyons more than a score of observations were taken during the month the patient was in the hospital, and hence they must be accepted as absolutely correct. A casual glance at the tracings is sufficient to show the great differences in the two periods. The actual number of pulsations in the apnoëic stage of eighteen seconds was 36, whilst in the dyspnoëic stage of forty-nine seconds they were only 82, instead of 98, which they should have been if the same ratio had been preserved. Chloral was occasionally given with much benefit as far as the patient's sufferings were concerned, and it always notably diminished the

length of the apnœic period, which fell to from ten to twelve seconds. Another new point made out by M. Biot was that the peculiar sphygmographic trace of aortic insufficiency was more marked during the apnœa, although the cardiac beats were most numerous at the same time. From this he argues that the arterial tension is less than during the period of dyspnœa. Again, the beats of the heart began to quicken as soon as the breathing became superficial, and to slow immediately on the resumption of breathing after its cessation; so that there was a distinct cardiac rhythm as well as a respiratory one, but alternating in time, the one ascending as the other was descending, and *vice versâ*. This is extremely well shown by the register of the tracings of the heart and chest movements. The patient experienced only a vague feeling of uneasiness during the dyspnœa, whilst his intelligence became slightly clouded during the apnœa. The rhythmical irregularity is obviously so dependent on some interference with either the cardiac or pulmonary innervation, or with both, that the attention of physiologists and physicians was quickly drawn to the pneumogastric nerves. Von Dusch, in 1867, describes this symptom as present in cerebral affections, tumours of the brain, basal meningitis, uræmic coma, etc. We think that in this there must be some mistake. The sighing respiration in late stages of meningitis is so very distinct from that which we have been considering, that we should scarcely think there was any possibility of their being confounded; yet we fear that Von Dusch must have done this, or otherwise it is impossible to explain the variety and number of cases in which he has noticed so very rare and striking a phenomenon. Schweig's explanation, that it is due to a contraction of the posterior lacerated foramen, and so causing compression of the vagi, is too absurd to require refutation. Prof. Laycock attributed the phenomenon to a sentient paresis of the respiratory centre, not necessarily dependent on structural or other disease of the heart; but this must happen more frequently by far than do cases of Cheyne-Stokes' respiration. Dr. Hayden would add to this a want of oxygen in the tissues generally, but the tracings of M. Biot clearly prove that, in some cases at least, the action of the heart, and consequently the rapidity of the arterial circulation, is increased not during the dyspnœa, but during the apnœa. Traube thinks that the accelerated respiration is due to inordinate stimulation of the pneumogastric nerves by the accumulation of carbonic acid in the lungs, and the apnœa to their prolonged over-action; whilst Filehne of Erlangen calls in aid the vaso-motor centre, believing that the activity of the respiratory nerve-centre is comparatively much more lowered. M. Biot's registers undoubtedly favour Traube's theory, but the origin of the peculiar rhythm and its steady persistence for weeks in some cases are still without any adequate explanation. More work is demanded on the part of physicians, pathologists, and physiologists, before a satisfactory hypothesis can be hoped for, and M. Biot shows well one mode in which this must be done.—*Lancet*, Feb. 17, 1877.

14. *Gonorrhœal Endocarditis*.—Dr. MARTY, of the Val-de-Grâce, has a paper on this subject in the *Archives Générales de Médecine* for December. It is based on a case under the care of Professor Poncet, but there is a pretty full *résumé* of a number of cases previously recorded.

D., aged twenty-two, was admitted to the Val-de-Grâce under M. Poncet, August 17, 1876. There were no rheumatic or cardiac antecedents in his family, and he had never suffered from any articular symptom. When five years old he stated that he had been subject to palpitations, but for several years he had been in the habit of lifting heavy weights without any trouble. His gonorrhœa began on August 15, after eight days' inebriation. The attack was of moderate severity; rather sharp pain, and abundant discharge; a little local inflammation; no general phenomena. In a few days he had some gastric catarrh, but not the least joint-pain. From August 17 to September 22, the gonorrhœa followed its usual course. On September 22 he had repeated rigors and intense headache. His gonorrhœa diminished without being completely suppressed. On the 26th the first sound at the base was altered, and on the 28th there was a systolic murmur, heard best at the junction of the

third left costal cartilage with the sternum, and conducted along the aorta. His temperature was 101.4° in the morning, and 103.2° in the evening. It had been so within a few points for four days, but the patient did not show much distress. His tongue was moist, his pulse full and strong. He was treated with a blister over the cardiac region, and digitalis. On August 4 there was some vomiting and a little intermittence of pulse. On the 5th there was some presternal pain; the pulse was full, but intermittent. The murmur was traced along the vessels of the neck. The discharge was almost nil. On the 6th the evening temperature again rose to 102.9° , and there was palpitation for the first time. There was abundant sweating; constipation; tongue moist. On the 8th there were some râles heard in the lungs, believed to be due to œdema. After the 13th the patient gradually improved. On the 23d there was nothing to note except that he was feeble, that he still sweated, that the murmur was scarcely altered, and that the urethral discharge had quite disappeared. On the 26th his general improvement was still maintained, but the gonorrhœa reappeared. Dr. Marty believed that the murmur was due to the occurrence of proliferating endocarditis at the level of or on one of the aortic valves.

We have only space to summarize Dr. Marty's general conclusions, which are as follows: Gonorrhœa may be complicated with inflammation of all the serous membranes, and may act in a direct way on each of them. Rheumatism is by no means a necessary middle term between the specific lesion and the lesion of the serous membrane, although the cases of coexistence of the two complications are most frequent. The cardiac complications are rare. Of the several orifices the aortic one is most commonly attacked. Endocarditis appears to have occurred as frequently as pericarditis, if not more so.—*Med. Times and Gaz.*, Dec. 23, 1876.

15. *Anomalous Conduction of Mitral Murmurs.*—At a late meeting of the Medical Society of London, Dr. Sansom related (*Med. Times and Gaz.*, Jan. 27, 1877) two cases recently under his care in the London Hospital, illustrating anomalous conduction of mitral murmurs. The patient in the first case was a man, twenty-four years of age, who had had three attacks of acute rheumatism, and had on a former occasion been a patient in the London Hospital, when a presystolic mitral murmur was noted. There was now a loud musical first-sound murmur, and a systolic thrill could be detected, whose maximum was a little to the left of the base of the ensiform cartilage. It was so strongly marked in the tricuspid area that most competent observers thought it must be due to tricuspid regurgitation. There was now no presystolic murmur. Dilatation of the right side and the usual signs of failing heart preceded death. At the autopsy the mitral orifice was found to be narrowed so as to admit only one finger, and to be surrounded by a calcareous ring. The calcareous matter was attached in largest mass to the interventricular septum. Dr. Sansom considered that this dense calcareous material had acted as a conductor of sound to the interventricular septum, and so by the right apex to the ear; hence the abnormality of position of the murmur. In the second case the patient was a man aged fifty, whose only previous illnesses were chorea at eight years of age, and scarlatina at fourteen. Lately he had had rheumatoid pains, but no fever. On auscultation, a musical presystolic murmur could be heard over an area not greater than a circle of one inch and a half in diameter, just to the left of the base of the ensiform cartilage. A little to the left of this spot there was a loud rough first-sound murmur. Twelve months after first coming under observation the presystolic murmur ceased to be audible. Before death, dilatation of the right side was manifest, with venous pulse and throbbing liver. To relieve ascites, paracentesis abdominis was performed, and it was noted that the urine, which just previously had been highly albuminous, now contained very little albumen, but was highly saccharine. The diagnosis in this case was arrived at by experience of the former. It was that there was mitral stenosis, the characteristic presystolic murmur of which had been conducted by dense material to the interventricular septum, and thence to the apex; that, considering the musical character of the murmur, the valve aperture was probably a calcareous

ring; that the murmur had ceased to be audible because the left auricle had become dilated and its muscle enfeebled; that there was, in addition, incompetence both of mitral and tricuspid valves. This diagnosis was exactly confirmed by the autopsy. Dr. Sansom thought the cases worthy of record, as the observations might be useful in diagnosis.

16. *Variations of Urea in Disease of the Liver.*—In a paper, the first part of which appears in the *Archives de Physiologie*, July, 1876, M. P. BROUARDEL gives a historical sketch of the views which have been from time to time published respecting the part taken by the liver in the formation of urea, from which it would appear that the great weight of evidence, both pathological and physiological, goes to show that a direct relation exists between the functional activity of the liver, and the excretion of urea, so that in all probability a great part of the urea which appears in the urine is formed in the liver. On account of the want of accurate clinical research upon this question, the author proposes to investigate the exact amount of urea excreted daily in various hepatic affections, and by a comparative analysis to arrive at a definite conclusion on the subject. 1. Of fatal jaundice (nente atrophy), no original cases are given; but from those recorded by Frerichs and others, it is regarded as satisfactorily proved that in proportion as this disease progresses the amount of urea steadily diminishes, and finally disappears. 2. In four cases of fatal jaundice produced experimentally in dogs by the hypodermic injection of phosphorated oil, the amount of urea excreted in twenty-four hours always diminished in direct proportion to the amount of phosphorated oil injected, and the severity of the general symptoms seemed also to vary with the amount of the poison used, and the diminution of urea. 3. In four cases of typhoid jaundice (*Jctère pseudo-grave*) with reduction of the size of the liver, the formation of the urea was lessened in the early stages of the disease, and during the typhoid it was observed that the urea was reduced to a minimum. The rather sudden disappearance of the severe symptoms (erisis), was found invariably to take place on the same day as the normal amount of urea appeared in the urine. 4. In three cases of simple spasmodic jaundice, the amount of urea seemed increased, and at the same time the size of the liver was augmented. The diminution in the amount of urea excreted in jaundice is thus made to bear a definite relation to the severity of the symptoms, and the gravity of the prognosis in any given case, and as a general rule it has been found that the formation of urea is in direct proportion to the size of the liver.

The paper is completed in the number of the same journal for September and October. M. Brouardel thus sums up the conclusions at which he has arrived, as to the variations in the excretions of urea in the different forms of liver-disease.

1. In an acute yellow atrophy, the urea diminishes or disappears entirely.
2. In phosphorus poisoning, although each dose of the drug causes a temporary augmentation of the quantity of urea excreted, it slowly diminishes.
3. Some pseudo-malignant cases of acute jaundice have the primary diminution of urea followed by a urinary crisis, and plenty of urea is secreted; the liver, which at first seemed to become smaller, recovers its ordinary size.
4. In simple jaundice, the urea is not diminished, sometimes it is augmented. The quantity of urea is a means of prognosis.
5. In hepatic abscess, according to Parkes, at first the urea is augmented, but this requires verification; as the liver-substance is destroyed it diminishes, although fever may be present.
6. In biliary calculus, with obliteration of the duct and destruction of liver-substance, the urea is diminished, especially during the attack of biliary colic. It is also diminished in hepatic intermittent fever.
7. In both the hypertrophic and the atrophic forms of cirrhosis, the urea is diminished.
8. In the congested and hardened liver of heart disease, the urea is diminished.
9. In the fatty liver of phthisis, the urea falls to low figures.

10. Cancer and hydatids cause the diminution of the urea when a considerable portion of the liver has been destroyed.

11. Active congestion of the liver causes increase of urea.

12. Lead-colic, with retraction of the liver during the attack, is accompanied by a small excretion of urea; as the liver regains its size, the urea augments.

13. Passing glycosuria is often accompanied by an increase in the urea excreted, or this may occur at the moment of its disappearance.

14. In diabetes the excretion of urea reaches a figure unattained in any other disease.

From these conclusions he infers that the quantity of urea depends upon—

1. The integrity of the hepatic cells;

2. The greater or less activity of the hepatic circulation.—*London Med. Record*, Jan. 15, 1875.

17. *On some New Tests for Bile Pigment.*—Dr. WALTER G. SMITH, Assistant Physician to the Adelaide Hospital, states (*Dublin Journ. of Med. Science*, Dec. 1876) that he has tried Maréchal's test (*Journ. de Pharm. et de Chimie*, Mars, 1869) in almost every case of jaundice that came under his notice in the wards or dispensary of the Adelaide Hospital, and has repeated and varied the test many times in the one case. A few specimens of bilious urine, kindly furnished to him by other hospital physicians, have also been tested, and in no single case has he failed to get the distinctive colour reaction.

The best mode of procedure is to place about 3j of the urine in a test-tube, and then to allow one or two drops of tinct. iodinii (B. P.) to trickle down the side of the tube, held nearly horizontally, so that the two fluids may touch but not mix. If bile pigment be present, a fine green colour will almost immediately be developed below the red layer of iodine tincture. By holding the test-tube up against a white cloud, or against any white surface, in a good light, the three zones of colour will clearly appear—viz., the red iodine layer, and the yellow stratum of urine, separated by the green layer.

The test succeeds better by flotation in a test-tube than by allowing the tincture of iodine to run into contact with the urine on a white plate.

If the colour of the urine be very dark, it is better to dilute it with at least an equal volume of water before applying the test. Should the quantity of bile pigment be very small, it is advisable to make use of a specimen of healthy, non-bilious urine as a standard of comparison, treating it similarly with the iodine solution. Very small quantities of the pigment can be detected by shaking up a little of the urine with one-fourth its bulk of chloroform. Allow it to stand, decant the supernatant urine, filter the yellow chloroform stratum, evaporate to dryness, and test. With the iodine test Dr. S. has succeeded in showing the presence of bile pigment in the yellow sputum of one case of jaundice. A simple solution of iodine in spirit will not answer, on account of the precipitation of free iodine on dilution, and the liquor iodinii and linimentum iodinii are unnecessarily strong. Even the tinct. iodinii (B. P.) may be sometimes advantageously diluted with spirit. It is important not to mix the iodine solution with the urine, and not to add too much of the iodine. From neglect of these precautions Dr. S. has known the test fail in the hands of others.

The green colour usually lasts for a considerable time, and may persist for days. Gradually it turns to a dusky brown, but even then the green can sometimes be restored by the cautious addition of iodine. Heat changes the green speedily to brown, and previous boiling of the urine prevents the development of the colour. Nothing characteristic was observed when the green fluid was examined by the spectroscope. The cause of the coloration evidently lies in a limited oxidation, the bilirubin, as in Gmelin's test, being probably converted into biliverdin, with this difference, that other tints—red, blue, or yellow—are not evoked by the feeble oxidizing power of the iodine.

The results of a number of experiments point to the conclusion that the green test is not a mere chromatic change, but is a true oxidation effect.

Up to the present Dr. S. has not been able to meet with a single source of fallacy in the use of the iodine test. Thus, in the deeply-coloured urines of continued fever, of acute pneumonia, of cirrhosis of the liver, of Addison's

disease (for which latter opportunity he is indebted to Dr. Duffey), and in yellow vomit, he has uniformly obtained negative results. Bloody urine offers no difficulty, and the presence of albumen does not interfere with the test.

Briefly to sum up the results of Dr. Smith's observations, it would appear that the value and delicacy of the nitric acid test are less than is commonly supposed, although it is depended upon in delicate physiological investigations, and that it is desirable to have at command supplementary tests for biliary pigment which shall be easy of execution and free from fallacy.

Four test-liquids seem to answer to these indications—viz., tincture of iodine, ferric chloride, peroxide of hydrogen, and the acetic or phosphoric solution of peroxide of lead. The two latter liquids possess over the former the advantage of being themselves colourless, whereby any change of colour produced in testing is more readily appreciated; and the phospho-plumbic solution especially promises well as a delicate reagent.

Peroxide of lead has been utilized in experiments on bile (Maly), but peroxide of hydrogen, and ferric chloride have not, to my knowledge, been used by other experimenters, and I venture to hope that physiologists and clinical observers will test their limits of usefulness.¹

With a fresh supply of material Dr. S. purposes to study more closely the action of the iron, lead, and hydrogen peroxide tests; but, as the clinical experiments have been chiefly conducted with the iodine test, he mentions, in conclusion, the reason which seems to recommend tincture of iodine to the notice of those interested in such matters.

1. A single reagent, always easy to obtain, is alone necessary.
2. The test-liquid is not corrosive.
3. A single definite colour is produced with the bile pigment.
4. The colour is sufficiently persistent.
5. From the less powerful chemical energy of the reagent, as compared with that of nitric acid, there is a diminished liability to error.
6. No other pigment than bile will yield the characteristic green colour.

And lastly,

7. The test fully equals in delicacy, possibly surpasses, the nitric acid test.²

18. *Cystic Hæmatoma of the Spleen*.—Dr. PAUL SPILLMAN describes (*Archives de Physiologie*, Aug.) a case in which he found this form of tumour in the spleen; he can find no record of a similar tumour occurring in this organ. It was of the size of an infant's head, attached to the inside of the spleen near the hilus. The interior of the cyst was made up of a number of communicating anfractuositities filled with a yellowish fluid containing cholesteroline. The following facts, taken from the detailed account, are dwelt upon as satisfactory evidence of the true character of the growth. 1. The cavity was lined with a single layer of cells like those which form the epithelial lining of the vessels. 2. In the general wall many points of calcareous deposit existed. 3. The inner surface was divided into numerous and intricate spaces. 4. The fluid contained numerous blood-corpuscles and crystals. 5. Neither inosite nor succinic acid, both of which constantly occur in hydatids, was found in the fluid. The cholesteroline is probably the residue of absorbed blood.—*London Med. Record*, Jan. 15, 1877.

19. *The Effect of Pilocarpine (the Alkaloid of Jaborandi) on two Cases of Unilateral Sweating*.—Dr. SYDNEY RINGER, Professor of Therapeutics at University College; and Mr. J. S. BURY, Physician's Assistant at University College Hospital, publish in the *Practitioner* (Dec. 1876) the report of an interesting clinical investigation into the effects of the alkaloid of jaborandi on two cases of unilateral sweating, of which the following is an abstract:—

A man and a woman, the subjects of unilateral sweating, were admitted into

¹ An account of recent investigations on the bile pigments will be found in Watts' Dictionary of Chemistry. Second Supplement, 1875.

² It should be borne in mind that all the experiments refer to human bile pigment.

University College Hospital, and on testing upon them the effect of pilocarpine very curious and unexpected results were obtained. The first injection caused in both cases far more copious perspiration of the normal than of the perspiring side. The woman, on any exertion, perspired profusely over the whole left side. She was subjected to six experiments. On the first the perspiration was much more abundant over the right side; on the next three occasions she sweated most on the left side; on the fifth most on the right side; and on the last, most on the left.

The man, admitted whilst apoplectic, perspired profusely without intermission over the right half of the head and face, and very freely over the right half of the chest and the right arm. Five experiments were made on him. On the first occasion the pilocarpine caused free perspiration on both sides of the body, though far more profuse on the left than on the right side; on the four following occasions, the perspiration was equal on both side of the face, but far more abundant over the left half than over the right half of his bald head. It is curious that the right half of the moustache did not grow till after the use of pilocarpine.

These injections produced another strange and unexpected effect. The pilocarpine cured the woman, who had suffered for years from the unilateral sweating. The first injection much reduced the left-side perspiration, and the subsequent injections removed it altogether, and though she remained under observation for several weeks longer, the sweating did not recur. The effect of the drug on the man's perspiration was less marked, though the first injection very greatly lessened it, so that it only amounted to slight moisture, whilst previous to the use of pilocarpine the right side of the face and head was always covered with large beads of perspiration, which, running together, trickled night and day down his head and face, and most freely whilst he slept. After twelve days, however, in spite of repeated injections, the unilateral sweating returned, and thence-forward the pilocarpine utterly failed to control the sweating, for though it still induced copious perspiration, it did not, as formerly, afterwards lessen the abnormal amount of it. One-hundredth of a grain of atropia was then injected, which in ten minutes dried the sodden skin, and it remained dry, or only perspired very slightly on rare occasions, during the subsequent eleven days, when the observations were discontinued.

The woman had previously suffered from difficulty in holding her water, which the pilocarpine increased, so that for a short time she suffered from incontinence.

The mode of proceeding was as follows: The face was wiped quite dry and then the pilocarpine was given, and subsequently about every three minutes the face was wiped, and how soon the perspiration reappeared and in what amount was noted.

In the case of a woman, one-third grain of pilocarpine was injected under the skin of the left arm; it brought on flushing of both sides of the face, especially of the right side, which to the patient at first felt hotter, and very soon she felt hot all over.

Perspiration appeared in seventeen minutes, at first equal on both sides, but three minutes later it was much more abundant on the right side, the difference being most marked, for while the left side of the face, arm, leg, and foot were nearly dry, the corresponding parts of the right side were wet with perspiration. In twenty-five minutes the perspiration began to decline, though it was still far more abundant on the right side. At this time it was noted that soon after wiping the face the left side was cool and dry, while the right side was hot and moist. The following night the left-side perspiration was very slight, far less than on previous nights. On the following day, August 11th, the experiment was repeated, injecting the pilocarpine into the right arm. Both sides of the face became equally flushed, but to the patient the right felt the hotter. On this occasion the perspiration was much greater on the left side of the face, the hands being equally moist. The left side of the face felt to the hand much colder than the right. On the twelfth the experiment was repeated, injecting one-third grain of pilocarpine under the skin of the right arm. Both sides of the face became equally flushed, the sweating at first being much more

marked on the left side of the face, the difference being most evident on the forehead. The hands were equally moist. Five minutes after, the perspiration became marked; we wiped the face, and after this, both sides of the face sweated equally.

On August 13th one-half grain of pilocarpine was injected under the skin of the left arm, noting previously that the left forehead was moist, the right dry. Both sides of the face became equally flushed. The left side of the body sweated much more than the right. One-hundredth grain of atropine was then injected under the skin of the right arm. In five minutes the left side still perspired freely; in fifteen minutes the sweating had entirely ceased.

On August 18th one-third grain of pilocarpine was injected into the right arm, and the right side of the face and the right arm perspired more than the corresponding parts of the left side.

On September 6th one-half of a grain of the alkaloid was injected into the left arm. She perspired on the left side, but, strange to say, this large dose caused no perspiration on the right side, and not excessive sweating on the left side. It lasted only thirteen minutes. As we have already stated, the pilocarpine quite cured this woman of unilateral sweating.

In order to ascertain if the unilateral sweating was due to some affection of the vaso-motor nerves inducing an increased supply of blood to the sweat-glands on the left half of the body, on four occasions nitrite of amyl was administered by inhalation in sufficient dose to flush the face strongly. On each occasion the face flushed equally on both sides, and in one instance only did the inhalation cause slight perspiration, and this was equal on both sides of the face; the left cheek, the left temple, the left half of forehead, felt during the flush much cooler than the opposite parts, whilst the patient averred that the left side felt to her hotter than the right.

20. *Pathology of Herpes Zoster*.—O. RIESEL (*Deutsche Med. Wochenschrift*, No. 23, 1876, and *Centralblatt für die Med. Wissenschaft*, No. 36) describes a case which, he thinks, tends to disprove Bürensprung's theory of the origin of herpes zoster from trophic nerve-disturbance. After extirpation of the left mamma in a somewhat anæmic woman aged 36, the left arm of the patient was laid upon a horsehair cushion in such a manner that pressure was made a finger-breadth above the inner condyle. The next day pain was experienced on the volar side of the forearm, and the day following a great number of infiltrations, which became transformed into the efflorescence of herpes a few days later. The further course of the disease was normal. Riesel refers to the fact that the injury affected almost exclusively the trunk of one of the principal nerves, just after its passage through the fascia into the subcutaneous connective tissue, and that, as in Bohn's cases, a brief and trifling injury produced the eruption. The author shows analogies between this case and those of traumatic paralysis following pressure upon or bruising of motor nerves, particularly in the arm. In contusion of nerve-trunks, according to Erb, the inflammation excited in the neurilemma is transmitted along the course of the nerve, until it reaches its finest twigs and even the muscles. In a similar manner, Riesel assumes in the case of herpes zoster an inflammation carried from the seat of injury to that of the eruption in the line of the nerve.—*London Med. Record*, Feb. 15, 1877.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

21. *Acute Traumatic Tetanus treated successfully with Chloral injected hypodermically*.—Mr. J. H. SALTER records (*Practitioner*, Dec. 1876) the details of a case of acute traumatic tetanus, resulting in recovery under the treatment of repeated hypodermic injections of chloral, which he believes to be the first case treated successfully by this method.

The disease resulted from a wound received during a fit of drunkenness, and followed by exposure to unusual cold, in a subject debilitated by habits of intoxication and low in the standard of intellectual development.

The treatment consisted in wearing out the acute character of the disease by the continued exhibition of the drug; neutralizing the tetanic poison so to speak, as fast as it was secreted: or, in other words, depolarizing the nervous centres excessively charged by the morbid processes of the disease.

22. *Tying the Common Carotid in Tic Douloureux.*—Prof. PATRUBAN, at the latter end of last year, read a paper to the Vienna Medical Society, relating several cases in which he has tied the common carotid for the relief of obstinate facial neuralgia. This has subsequently been published in the *Allg. Wien. Med. Zeit.*, 1876, Nos. 48 to 50.

1. A strong, industrious girl, whose age is not given, who had always enjoyed good health, came under Prof. Patruban's care after all the various remedies for a severe diffuse neuralgia of the first and second branches of the fifth pair had been tried in vain. There was much visible local hyperæmia and excessive hyperæsthesia; and, on the occurrence of the paroxysms, violent pulsations were felt in all the arteries that were accessible. As the attacks continued to increase in duration and intensity, the common carotid was tied, on the strength of the success which had been obtained in other cases. From the moment the patient awoke from the effects of the anæsthetic to the present time (now six years) she has had no recurrence, while all hyperæmia has disappeared. 2. A woman, sixty-three years of age, was seized with the most intense pain in the whole range of teeth on the right side, no relief following their extraction. After all the most reputed remedies had been tried, neurectomy of the infra-orbital nerve was performed, with the effect of completely relieving the pain for nine months. After that period the neuralgia recurred, affecting the supra-orbital and infra-maxillary nerves of the same side. The common carotid was tied, and the pains disappeared for four entire years. A relapse then occurred, but in a very mild form, so that hypodermic injections sufficed to relieve the pains. The neuralgia, however, became associated with great local hyperæmia, especially affecting the mucous membrane of the mouth, and requiring for its relief deep scarifications, which gave discharge to an abundance of blood. 3. An intelligent man, aged forty-one, underwent neurectomy of the infra-orbital nerve for severe neuralgia. Obtaining relief only for eight months, the carotid was tied. The immediate result was, as usual, remarkable; but at the end of eight months another relapse occurred. Chloral was given with good effect to relieve the pains; but the patient, emboldened by its use, on one occasion took three drachms, with the result of producing all the symptoms of poisoning. The symptoms immediately threatening life were warded off; but an ophthalmia, which set in with the commencement of the symptoms of poisoning, rapidly increased in severity, so that in sixteen hours the eyeball burst, discharging the vitreous body and lens, the patient only awakening to consciousness after thirty-six hours' sleep. Attacks of neuralgic pains, which still sometimes recur, are kept under by hypodermic injections of morphia. It is interesting to observe that the paralysis of the nerves of the vessels, which in recent times is regarded as the explanation of the asthenic inflammation of the eyeball, and which was here doubtless due to the poisoning by chloral, occurred on the side on which the ligature of the carotid had given rise to permanent changes in the condition of the circulation. 4. This was a case of infra-orbital neuralgia occurring in a married woman, aged thirty-seven, for which, after numerous remedies had been tried, neurectomy was resorted to with such good effect that no attack occurred during fourteen years. A relapse then took place, showing itself first as neuralgia mentalis and infra-maxillaris of the same side, and then as infra-orbitalis of the opposite side. These various nerves were excised with temporary relief, when the pains recurred with such violence, sometimes in one spot and sometimes in several, that the patient was almost driven to suicide. The left carotid was tied, and the result was quite successful, at least for two years, at the end of which time she died from cancer. 5. A strong young man contracted rheuma-

tism in Lombardy, which was followed by infra-orbital neuralgia of a very obstinate character. Neurectomy was performed, but as a relapse occurred in a year, the carotid was tied with great difficulty, owing to the great violence which the patient exhibited while under the influence of chloroform. A second neurectomy was performed, but with only temporary benefit. 6. A tradesman from Hungary applied on account of an excessively severe neuralgia infra-maxillaris, for which neurectomy was performed. At the end of a year the neuralgia returned, radiating over all the branches of the fifth pair, and the carotid was tied. How little the operation deranged the general system of the patient may be judged of by the fact that six hours after its performance he was found playing cards at a *café*; and when the wound was still unhealed, and the ligatures had not come away, he insisted on travelling to his distant home. A relapse occurred in about eleven months, after exposure to severe weather, and excision of the second branch of the fifth pair, just under the foramen rotundum, was performed. At the end of a year he wrote to say that he still had slight attacks of pain from time to time, and since then he has not been heard of. 7. A Polish priest, who suffered from the severest diffused neuralgia accompanied by local hyperæmia, had the carotid tied, but died of pyæmia. 8. A woman, who had undergone great mental anguish and suffered from rheumatism, became the subject of infra-orbital neuralgia, for which neurectomy was performed; and, after an interval of fourteen months, the same operation was performed on the third branch. This gave relief for two years, when neuralgia again showed itself in a diffuse form, even extending to the hairy scalp. This was accompanied with local hyperæmia of the parts and a remarkable inflation of the skin. All the accessible arteries could be felt pulsating forcibly, and there was great increase of temperature. Here was evidently an indication for ligature of the carotid, which was performed with the most beneficial results.

These cases, Prof. Patriban believes, offer a complete justification of the operation in obstinate cases of neuralgia.—*Med. Times and Gaz.*, Feb. 10, 1877.

23. *Anæsthesia of the Larynx before Operation.*—In the treatment of diseases of the larynx, some patients are met with in whom sensitiveness is so excessive that it is beyond the ability and patience of the most perfect operator. It is also not uncommon to be so pressed for time that the series of proceedings necessary to bring the patient to complete tolerance cannot be gone through. It is for these special cases that laryngeal anæsthesia, invented by Turck and perfected by his pupils, especially by SCHROTTEN as described in the *Progrès Médical*, October 14, 1876, should be reserved. The latter performs it at the Vienna Hospital in the following way: If the operation is to be performed the next day, at about seven o'clock on the preceding evening the laryngeal mucous membrane is touched twelve times in succession with a pencil steeped in pure chloroform. This proceeding is intended to bring on intense congestion of the mucous membrane, and to place it in the most favourable condition for absorption. At eight o'clock, that is to say, one hour afterwards, a pencil steeped in a saturated solution of acetate of morphia, is plunged twelve times in succession into the larynx. The patient must take care not to swallow, and between each painting should rinse the mouth and throat, as an antidote, with a gargle composed of 10 parts of tannin and 15 of alcohol, in 200 of distilled water. It is advisable to visit the patient about midnight, to make sure that no marked symptoms of poisoning by morphia exist. At seven o'clock in the morning the larynx is generally found to be insensible, and it can be operated on. If a small amount of the sensitiveness still exist, the paintings are renewed twelve times, and so on every hour until the object sought is attained. The disadvantages of this method are the fear of poisoning by morphia, easily removed by a little watchfulness and by the recognized remedies. The advantages have been already enumerated, and indeed it is necessary to have been present at one of these operations, rendered so easy in a patient who the evening before was considered to be entirely inamenable to treatment, to appreciate anæsthesia of the larynx at its just value.—*London Med. Record*, Dec. 15, 1876.

24. *On the Minute Anatomy of Two Cases of Carcinoma of the Breast preceded by Eczema of the Nipple.*—At a late meeting of the Royal Medical and Chirurgical Society (*Med. Times and Gaz.*, Feb. 10, 1877) Mr. BUTLIN read a paper on the above subject. The author observed that the same conditions were found in these cases as in the two breasts which were the subject of a communication to the society last session (see *Transactions*, vol. lix.), namely, dilatation of the ducts and alteration of their epithelium, with proliferation of the same; infiltration of the surrounding connective tissue with small cells; dilatation of the small ducts and acini, with proliferation of their epithelium. Further, there were in these cases fusion of the acini and ducts thus filled, with proliferating epithelium into larger and irregular spaces; escape of the contents, or growth of the contents into the surrounding tissues, producing the full formation of carcinoma. With a view to discovering the origin of the newly formed epithelium in the ducts and acini, a careful comparison of the characters presented by this epithelium and by the cells in the connective tissue was made. The difference was most marked. No transitional forms could be discovered. No connection was found between the two sets of cells. The author said it was therefore held that the disease is essentially a disease of the epithelium of the mammary gland; and it is thought to travel from the surface of the nipple and areola through certain of the ducts to the smaller ducts and acini.

Mr. MORRIS remarked that it seemed to be the experience at St. Bartholomew's Hospital that eczema of the breast was commonly followed by cancer; at all events, he understood it had been stated that this was Sir James Paget's experience. He had examined the records of some 400 cases of cancer in Middlesex Hospital, but had not been able to elicit any history of previous eczema in cases of cancer of the breast. Last July he had seen a female, the mother of seven children, aged forty, who had suffered from eczema of the breast for five years. She had, when seen, an ulcerating sore close to the nipple, with some hardening around it. There was also an indurated gland in the axilla. Epithelioma was suspected; the breast was removed, and the woman made a good recovery. On examination no epithelioma or other form of cancer was discovered. The surrounding induration was merely inflammatory.

Mr. HULKE said Mr. Butlin's conclusions confirmed the opinion he had now long entertained, namely, that the various forms of cancer had an epithelial origin. In cancer of the skin the process could be gradually traced from the proliferation of epithelium to a pure epithelioma, with filling, choking, and breaking down of the sebaceous glands. So in ichthyosis of the tongue; this might remain for long a simple hypertrophy of the natural epithelium, till that began to dip down into the deeper parts, and so produce an epithelioma.

Dr. THIN said that the connection of cancer and eczema had hardly been observed save in England. The causes for eczema of the breast which were usually assigned by Hardy, could hardly have existed in Mr. Butlin's case. The epithelial origin of cancer was becoming more and more recognized. Cornil and Ranvier attributed the origin of cancer to the spaces in the connective tissue; but, by making careful sections, the connection between the epithelium and cancer was easily made out. But the views as to the mode of growth of epithelium lay at the bottom of all this, and these were still unsettled. Dr. Thin also criticized the use of certain common terms now made use of, such as "connective-tissue corpuscle," "nucleated protoplasm," and the like, and advocated a return to the use of the old word "cell."

Sir JOSEPH FAYRER was quite sure of the intimate connection between epithelioma and the various forms of cancer. The close alliance was seen in the development of epithelioma from irritation of the lip, and of cancer from the cicatrix of a burn.

Sir JAMES PAGET had no doubt in his own mind that chronic eczema, or any other irritative disease of the breast, might be followed by cancer. He was so certain of the connection that he would venture to predict, in a person of a certain age suffering from such irritative disease, the likelihood of cancer following. In some cases the local affection was psoriasis, and in one instance he had seen simple excavation of the nipple followed by cancer. He had ob-

served fifteen or twenty cases which illustrated this general law; and he would go so far as to say that the rule applied not to cancer of the breast alone, but to any other organ, where, the conditions being favourable, continued irritation would set up cancer. There was no over-statement involved in saying that half the cases of epithelioma of the tongue occurred this way.

25. *Case of Gastrotomy.*—M. KOENIGLÉ, of Strasburg, has communicated to the Société de Chirurgie (*Gaz. des Hôp.*, Jan. 27) a case of irreducible retroversion of the uterus, which, by compression of the intestine, induced a complete arrest of fecal matters, accompanied by the ordinary symptoms of intestinal obstruction. Gastrotomy was successfully performed, the uterus being adjusted by passing the finger through the aperture in the abdomen, after which all accidents ceased. Profiting by the aperture, the surgeon fixed one of the ligaments within the wound, with the intention of fixing the uterus to the wall of the abdomen, and in this way effected a radical cure. He sacrificed a healthy ovary, but he would not have proceeded thus had not an opening been made in the abdomen for an operation that was absolutely necessary. He utterly discountenanced any operation of this kind undertaken expressly for the reposition of a retroverted uterus.—*Med. Times and Gaz.*, Feb. 10, 1877.

26. *Thrombosis Penis.*—Mr. R. OLENT LUCAS, Assistant-Surgeon to Guy's Hospital, reports (*Practitioner*, Jan., 1877) a case of a curious affection of the penis, which recently came under his care—an affection which, so far as he is aware, has not hitherto been described.

"A stout plethoric young publican, twenty-three years of age, married, of medium height, but about thirteen stone in weight, consulted me under the following circumstances on July 12, 1876: Six days before he had gone down to Margate for a holiday, and he there met a paramour with whom he had been associated previous to his marriage, which took place three years ago. He remained with her two days and nights, and left her owing to an uncomfortable sensation of strain in the penis and a fear that he had contracted some venereal disorder. A day later he felt pain and itching along the right side of his penis, and observed a red line running from the base forwards to the prepuce. On the third day the foreskin and forepart of the penis had become considerably swollen. The day following, when I saw him, the prepuce was in a state of phimosis, and the whole penis swollen and œdematous. Between the dorsum and right lateral surface was a red line running forward from the base of the penis to the prepuce. The red line overlay a firm round cord the size of a large crow-quill. There was no glandular enlargement in either groin, but the superficial veins of the thighs were in a state of varicosity. Manipulation failed to cause any pus to escape through the phimosed prepuce, either from between it and the glans or from the orifice of the urethra. He had had no scalding, and, up to the time that it became no longer possible to retract the foreskin, he was quite sure no abrasion or pimple existed beneath it. He was ordered to bathe the organ with a solution of lead, and to support it in contact with the abdomen by means of a bandage.

"On the 17th I saw him again. The œdema had so far subsided that it was possible to retract the prepuce, and the surface thus exposed was seen to be perfectly healthy. There was not a trace of sore or abrasion of any kind, nor was there any discharge from the urethra. The red line had almost disappeared from the side of the penis, but the hard cord could still be distinctly felt.

"A week later the œdema had completely subsided, the cord was scarcely to be felt, and the parts had resumed their normal aspect.

"I have related the case as it came before me that those who read it may, as they do so, form their own opinions upon the nature of the affection. The appearance of the organ, taken together with the history of the immediate antecedent circumstances, suggested at once the idea of inflamed lymphatics consequent upon chancre beneath a phimosed prepuce. That the affection was not one of the lymphatics, I think, however, there is conclusive evidence. In the first place, neither before the prepuce became phimosed, nor when the swelling had so far subsided as to again allow of retraction, was there any

evidence of pimple, sore, or abrasion that might have excited absorbent inflammation; and secondly, the glands in the groin did not show the slightest tendency to enlarge, as they would most certainly have done had the inflammation extended along the lymphatics. On the other hand, the œdema of the penis was greater than any I have ever witnessed consequent upon chancres or gonorrhœa. There was a doughy white condition of the organ, free from signs of inflammation, except along the line referred to. The red line corresponded to the position of the superficial vein, which takes a course backward between the dorsum and lateral aspect of the organ, and which is often unsymmetrical. That inflammation and plugging of this vein gave rise to the swollen and œdematous condition of the penis, there is in my mind no doubt; and this explanation is supported by the fact that the superficial veins of the thighs and legs were in a varicose condition, and, by the patient's own statement, that the particular vein in question was always prominent, and probably in as unhealthy a state as those of the lower extremities. The importance of recognizing penile phlebitis as an affection giving rise to symptoms not unlike venereal disease, yet entirely independent of venereal infection, will, I trust, be considered a sufficient reason for my bringing this case before the profession. Whether or not the affection be a rare one, the knowledge that a phimosed and œdematous condition of the penis sometimes results from an inflamed superficial vein may be of value in practice, and perhaps prevent errors of diagnosis which in their consequences might be disastrous."

27. *Ergot in Atony of the Bladder*.—Prof. VON LANGENBECK, at a meeting of the Berlin Medical Society (*Berlin Klin. Woch.*), stated that in atony of the bladder, associated with enlarged prostate, in elderly men, in which the organ is never completely emptied of urine, he has lately tried the hypodermic injection of ergotine with most surprising results. In three cases the contractile power was at once increased so as to enable the patient to discharge additional urine, and in a few days it had so augmented that very little urine was left behind. After one or two injections the improvement was considerable, and even a diminution in the size of the prostate seemed to have ensued. Dr. Israel said that he had derived the same benefit from the employment of the ergotine, and referred to the case of a patient who was thus enabled to hold his water for three hours, whereas before he voided it every ten minutes. —*Med. Times and Gaz.*, Feb. 24, 1877.

28. *The Immediate Cure of Piles*.—Mr. H. A. REEVES, Assistant Surgeon to the London Hospital, reports (*Lancet*, Feb. 17, 1877) that "during the latter part of last year I commenced the treatment of piles about to be described, and having now submitted eighteen cases to this new method, and sufficient time having elapsed to form a fair judgment as to the result of most of the cases, it is time to make the simple operation more public, so that others may try it, and report their results. All patients operated on suffered from the severer form of internal piles, and four of them were bad cases—i. e., the piles were very large and ulcerated in large superficial patches, and the general condition was distressing, as there were anæmia and haggard aspect due to hemorrhage and pain.

"To this rapid method of treatment I have applied a term used by Mr. Barnard Holt, and now so well known to the profession—viz., the *immediate cure*; and I have used the word *cure* advisedly, as the first batch of patients have not had the slightest trouble since they were operated on. The last five cases are too recent to say anything as to ultimate results.

"I feel that the term 'immediate' is more strongly applicable to this method than to that of Mr. Holt, for not only is the operation rapid, but the *entire treatment* is very short as compared with the ordinary methods of treating hemorrhoids—i. e., by nitric acid, ligature, or clamp and cauterization.

"In the *immediate cure* of piles, I can truly state that, so far as my present experience goes—and this case can be corroborated by several witnesses and by the patients also—the operation is rapid and trifling, and may in some cases be done without anæsthetics; it is unattended with the least risk, and the *cure* permanent.

"The operation is simply this: The piles being well down, they are punctured with the conical pointed end (which I have had made by Messrs. Mayer and Meltzer to fit on to Dr. Paquelin's gas cautery, and which is figured in Mr. Joseph's paper in a recent number of the *Lancet*) to their bases, the number of these hot punctures varying with the number and size of the piles, a pile the size of half a small walnut requiring two or three. A dull-red heat should be used, and the point gently rotated while being extracted and *not pulled out*, because if this be done a portion of the eschar will be withdrawn with the instrument, and some hemorrhage will follow. Should the disease be of old date, some of the piles will be quite hard; these I have pierced to their softer attachment, at the feeding veins of which they were clot-laminated, and even fibrous varicose transformations. Ulcers and fissures in connection with the hemorrhoids were touched with the cautery.

"If this simple plan be properly followed, there is no hemorrhage, but should there be slight oozing, a touch of the cautery at once stops it; the piles are then returned, and a half-grain morphia suppository introduced. The bowels are kept confined by a quarter of a grain of morphia daily, by mouth or subcutaneously, for the first two or three days, and on the fourth or fifth day an enema-tube is gently introduced and a warm injection given, and followed on the succeeding day by a laxative. The first two, or in some few cases three, motions, produce pain, but nothing as compared with that the patient suffered *before* the operation; and at the expiration of a week they are discharged, with such directions as to diet and regimen that will promote the healthy functions of the rectum, and which are known to all professional men.

"It is right to state that two of these eighteen cases were not allowed out for ten days, and one for a fortnight, but in all there was some other pre-existing complication, either urinary or uterine. Sixteen of them were treated at the Hospital for Women, and two in private. I have seen them all several times since, and examined them with finger and speculum, and I can say that the satisfaction of the patients at their rapid and permanent relief is not greater than was mine when I observed how little damage was done to the rectum, as evidenced by the difficulty of detecting, some little time after, any result, in the shape of cicatrices, of the operation. The ages of the patients varied from twenty-three to sixty.

"I am happy to say that I have not yet had an opportunity of examining *post mortem* any case operated on, but I conceive that the *rationale* of the method is that the igni-puncture sets up a phlebitis which soon leads to obliteration of the diseased veins; that the phlebitic clot is, somewhat rapidly, sufficiently absorbed, or so altered as to render it difficult for the fingers to detect any nodules or lines of thickening in the rectum. Whatever the traumatic pathological change may be, certain it is that the *symptomatic* relief is not only speedy but lasting. I may mention that I had occasion to operate on a patient for urethral mischief, who had undergone this procedure for piles three weeks previously, and neither I nor others present could discover the least trace of any recent operation on the rectum.

"I do not wish it to be thought that I consider the operative results, as regards nodulation and disappearance of the altered piles, will always be so rapid; this may or may not be so without affecting that which the patient and the surgeon most desire—viz., the cure of the case. I briefly sum up what I consider the advantages of this method over the old plans.

"1st. The operation is quickly done.

"2d. The cure is much more speedy, as, by the ligature or clamp and cautery, three weeks is considered quick time for convalescence.

"3d. There is no fear of secondary hemorrhage, as there is no ligature to separate, and no wounded surface to cauterize.

"4th. Nothing is removed. To the patient this is very often a strong recommendation; to the surgeon, at first and without experience of this method, it may seem a drawback, but sufficient trial will convince him to the contrary.

"5th. There is no apprehension of secondary abscesses and fistulæ so far as my experience has gone.

"6th. There cannot possibly be a stricture as a result of the operation.

That this has occurred several times after the old methods no one can gainsay, and may quote a case sent me by Dr. Heywood Smith, on which I operated by the clamp and canterly, and only removed the piles and not a particle of other rectal tissue, and in seven weeks had to commence the use of bougie for an annular stricture near the orifice. Nothing of the kind pre-existed.

"7th. There are no relapses. Two of the cases I operated on had been elsewhere treated by ligature, and the other with clamp and cautery. Of course, if all the diseased part be not punctured at the time of operation, the portion left untouched may be the source of future trouble, necessitating an operation, and it may be that this was the explanation of the relapses in the two cases just mentioned. On the other hand, it is fair to state that other veins, already weak at the time of operation, but not sufficiently so to attract attention, subsequently enlarged and required meddling with.

"8th. In patients who can bear a little pain no anæsthetics are necessary, as the operation is a quick one.

"It is obvious that this plan can be applied to other varicose veins and to hæmorrhoids.

"Before concluding I may mention that I have, in two cases, tried the revived plan of sudden dilatation of the sphincters; one did moderately well, the other had to be igni-punctured. I have, in one case, injected the piles with solution of perchloride of iron undiluted, but the result was not satisfactory. I believe, however, that a weaker injection of iron, or of water and iodine, or of chloral, would be effectual, and have the advantage of not needing anæsthetics."

29. *Aortic Aneurism treated by Ligature of the Left Carotid Artery.*—At a late meeting of the Clinical Society of London (*British Med. Journ.*, Feb. 17, 1877), Mr. CHRISTOPHER HEATH showed a specimen of aortic aneurism from a man, in whom he had tied the left carotid artery in February 1872, and who had been brought before the Society both in 1872 and 1873.¹ He died in September, 1876, from bursting externally of the aneurismal sac, which proved to have sprung from the ascending portion of the arch of the aorta, and not, as had been supposed, from the transverse portion. Mr. Heath remarked that, though the relief from the operation had been marked and undoubted, it was difficult to explain its *rationale*, since the case did not support the view which had been put forward that the branch next beyond the aneurism should be tied. Unfortunately, the clot had been unavoidably removed, so that it was impossible to say whether it had extended for any distance down the aorta from the left carotid; but this vessel was completely filled with clot, which was adherent to the lining membrane of the artery only at the point of ligation. No trace of the catgut ligature was discoverable, and it was remarkable that the coats of the artery showed no evidence of having been divided by it. Mr. Heath said he did not attempt to theorize on the case, but contributed it in order that a complete record might be made in a case in which undoubted benefit had accrued from the application of the distal ligature.

Mr. HOLMES exhibited the patient on whom he had performed this operation, the case having been brought before the Society a year ago (*Monthly Abstract of Med. Science*, May, 1876, page 235). The patient, a young woman twenty-one years of age at the time of operation, had a large aneurism, probably connected with the transverse part of the arch of the aorta towards its termination. The left common carotid was ligatured on October 21st, 1875. Mr. Holmes remarked that it was the only other case, so far as he was aware, in which the suggestion had been carried out, and he had been led to do it by the improvement which followed Mr. Heath's operation in Dr. Coekle's case. The aneurism was supposed to implicate the innominate and the carotid, but turned out to be aortic. The case was one of the worst cases of aortic aneurism he had ever seen; there was a loud *bruit* audible at some distance; the patient had profuse hæmoptysis, and, in Mr. Holmes's opinion, could not have lived a month. Prolonged rest, followed by Tufnell's treatment, caused great

¹ See *Am. Journ. of Med. Sci.*, for April, 1873, p. 486.

improvement; in half a year she was sent to Wimbledon, where exertion led to renewal of the symptoms. The aneurism appeared to be extending up the neck, which was, Mr. Holmes thought, the indication for the operation. Immediate marked benefit followed the operation, and the tumour subsided considerably, the dyspnœa diminished, and hæmoptysis nearly ceased. She was now in comparative comfort, though still in a state in which any exertion might easily cause death. There was still a constant hacking cough. Mr. Holmes thought that the only reasonable explanation of the action of ligature was that a clot was produced in the vessel tied, and that this extended down into a part of the aneurism. Wardrop's explanation left out of sight the circumstance that the collateral circulation increased directly after the ligature. Though prolongation of life could not be anticipated, the girl owed, he thought, a respite to the operation.

Mr. BRYANT related a case in which he had acted on the suggestion of ligaturing the carotid. Three weeks ago he had been asked to see a case of aortic aneurism in a man fifty-six years of age, under the care of Dr. Wilks, to ascertain if anything could be done for him surgically. The aneurism involved the aorta and innominate artery, projecting from above the clavicle, pressing on the larynx, and interfering with speech and deglutition. He had already been treated for some weeks on Tufnell's system, but without effect. Mr. Bryant hesitated on account of the age of the man and the fact that the aneurism was obviously aortic; but, encouraged by Mr. Annandale's case, where ligature of the right carotid gave great relief, he resolved to operate. Having placed before the patient the danger of the operation and the inevitable result if left alone, the man consented to the procedure. The right carotid was therefore ligatured about a fortnight ago with carbolized catgut, the artery proving to be remarkably large and thick-walled. The patient went on well for some days. From the second day he seemed better, and the pulsation had much diminished; some, however, continued above the clavicle and sternum, but it was altered in character. He went on well till the ninth day; no suppuration occurred; he took food well: but he then rather suddenly changed, and died on the tenth day. At the *post-mortem* examination, the right jugular vein was found to be filled with thrombus, and there were some secondary deposits, which Dr. Goodhart believed to be pyæmic in nature; and the spleen was softened. There was enormous dilatation of the ascending and transverse portions of the arch of the aorta, with extensive atheromatous degeneration and calcareous plates. The ligatured artery was completely plugged; the ligature had disappeared, but the coats of the vessel were cut through and separated a line apart. The left subclavian artery was also completely occluded. The left radial pulse could not be felt before the operation. There was no coagulation whatever in the sac. The operation had, therefore, done no good, although he believed it to have been perfectly justifiable.

30. *Treatment of Erectile Tumours by Injection of Chloral*.—Dr. MOUL-LARD, in his *Thèse de Paris*, 1876, does not pretend to demonstrate that chloral in the form of injection is superior to other modes of treatment. He contents himself with reporting three cases in which injections have given favourable results. Ten drops of solution in equal parts produce a slight hard inflammatory tumefaction, situated round a small scarified spot. In another case, M. Marc Sée saw some serious accidents supervene from chloralization. This, however, was in consequence of the multiplicity of the punctures made simultaneously. The way to avoid these accidents would be only to make the punctures at intervals of several days.—*London Med. Record*, Jan. 15, 1877.

31. *Trephining in Fracture of the Cranium*.—M. C. SEDILLOT (*Gaz. Médicale de Paris*, No. 39, 1876) has recently put forth a further contribution in support of his view that in fracture of the internal table of the cranial vault with displacement of fragments, trephining is the only means of preventing complications that are almost invariably fatal. Of 106 cases of fracture of the cranium collected by the author, there are seventy-seven in which trephining was practised and twenty-nine in which no operation was performed. In nine

cases the operation was *preventive*, that is to say, it was performed before the manifestation of any bad symptoms. In sixty-eight cases it was *cureative* and had as its aim the relief of serious complications, such as paralysis, loss of consciousness, convulsions, and coma. In twenty-one of the latter set of cases the operation was performed before the sixth day from the receipt of injury, and in the remaining forty-seven cases after this period. In all the 106 cases the internal table was fractured. In twenty-one cases the external table was not involved, and in most of these the symptoms were so slight that the gravity of the injury was overlooked.

Out of the twenty-nine cases of comminuted fracture of the inner table in which trephining was not performed, there was one recovery only and twenty-eight deaths. Of the seventy-seven patients who were trephined thirty recovered and forty-seven died. In nine of these cases the operation was performed for prevention of serious symptoms; in six with success, in three with a fatal result. In sixty-eight cases the operation was *cureative* and resulted in twenty-four of them in recovery, and in forty-four in death. Of the twenty-one cases in which the operation was performed before the sixth day from the date of injury, eight ended in recovery and thirteen in death. Of forty-seven patients trephined on or after the sixth day, fifteen recovered and thirty-two died. The mortality, M. Sedillot points out, bears a direct proportion to the delay in the application of the trephine. Two-thirds of the number of patients were cured by "preventive" trephining, more than one-third by *early* trephining (before the sixth day), and less than one-third by *late* trephining (on or after the sixth day). Of the twenty-nine cases in which the operation was not performed, one only ended in recovery. These figures show, according to the author, that comminuted fracture of the inner table of the skull is an injury almost invariably fatal if no attempt be made to elevate and to remove the fragments.—*Brit. and For. Med.-Chir. Review*, Jun. 1877.

32. *On Fractures of the Pelvis*.—DR. RIEDINGER, of Würzburg, in a paper on fractures of the pelvis (*Laugenbeck's Archiv für Klin. Chirurg.* Bd. xx. Heft. 2), states that these injuries, compared with fractures of other large bones, are of very rare occurrence. In a collection of tables of fractures taken from eight hospitals, which is published in Gurlt's Handbook, it will be found that out of 11,600 fractures of different bones, 98 only implicated the pelvis. Of 159 fractures treated at the Julius Hospital, Würzburg, during twelve months, there was one only in which the pelvis was injured. The proportion of fractures of the pelvis to fractures of other bones is, according to Bardeleben, about 0.3 per cent.

Of the constituent bones of the pelvis, the one most frequently fractured is the pubis. Whether the horizontal or the descending ramus of this bone be more frequently broken is a point which has not been strictly determined. In five out of eight cases, reported by Wernher, the descending ramus was the part implicated; on the other hand, in twelve cases collected by Streubel, there were ten in which the horizontal ramus, and two only in which the descending ramus had been fractured. Next to the pubis, in respect to frequency of rupture, follows the ilium, then the ischium, then the acetabulum, and finally the sacrum. In several cases there is fracture of two or more of the pelvic bones. Fractures of the pubis are, as a rule, oblique; those of the sacrum transverse. In the ilium the fracture may take any direction; in most instances the line is either vertical, dividing the bone into an anterior and a posterior portion of unequal size, or horizontal, with superior and inferior fragments also unequal. The crista iliæ is sometimes detached *in toto* through injury, and may in addition be broken into an anterior and smaller fragment and a posterior and larger fragment. Either of the anterior spines of the ilium may also be broken off.

The majority of cases of fractured pelvis terminate fatally; some in consequence of concomitant injuries to the brain and spinal cord, others through internal hemorrhage, and others again through wounding of pelvic viscera. Injury to the bladder or urethra is a frequent complication, especially when the horizontal ramus of the pubis is fractured. Although the prognosis is, as a

rule, very unfavourable, a speedy and complete recovery may take place after severe injury and multiple fracture of the pelvis.

The author does not agree with those who hold that fracture of the pelvis is in every instance the result of direct external violence. He recognizes the fact that the injury is often due to forcible pressure as in "buffer" and other railway accidents, to a severe blow on the pelvis, or to a fall from an elevation, but at the same time believes that some forms of pelvic fracture may fairly be attributed to muscular action. The part played by muscular action and by forcible traction on the tendinous and ligamentous structures in the production of fracture has of late been much extended. It is now generally acknowledged by surgeons that detachment of the lower epiphysis of the radius, and fracture of a malleolus, of the neck of the femur, of the greater tuberosity of the humerus, of the patella, and of the olecranon, may be produced by traction. The anterior inferior spine of the ilium may, as has been proved by experiment on the dead body, be torn away by forcible traction on the ligamentum Bertini, and likewise the anterior superior spine may be detached through strong contractions of the sartorius muscle. In young subjects the crista ilii, which is but loosely connected to the rest of the bone, may be readily detached in consequence of a fall or blow. The author points out that in every case of such form of injury the whole of the epiphysis is detached, although the injuring force has often been applied but to a small portion. In order to explain this the author holds that another factor must be sought for, and that this is probably strong contraction of the muscles which are inserted into the outer surface of the crista, viz., the gluteus maximus and the gluteus medius, both strong muscles and capable of producing a separation of the crista. The patella, as is well known, is often broken through the contraction of the quadriceps extensor muscle, and the olecranon by the action of the triceps muscle. The occasional occurrence of a secondary fracture of the crista ilii into an anterior and smaller portion and a posterior and a larger portion, may be explained by the fact that the gluteus maximus is inserted into the portion of bone which corresponds to one fragment, and the gluteus medius into the other and posterior portion. An outward inclination of the crista ilii favours its detachment through muscular contraction.

Fracture of the body of the ilium, dividing it into a superior and smaller fragment and an inferior and larger fragment, may, the author believes, be caused in some instances through the conjoined action of all the glutei muscles. This view may be more readily accepted if it be considered that the glutei muscles are very strong, and that the resistance of the bone is diminished by its outward inclination. From experiments on the dead body it has been found that fracture of the ilium produced through powerful pressure or violent blows takes usually a vertical or slightly oblique direction.—*Brit. and For. Med. Chir. Review*, Jan. 1877.

33. *Partial Resection of the Sacrum on account of a Central Tumour.*—The above operation was performed by R. VOLKMANN (*Centralblatt für Chirurgie*, No. 46) on the wife of a gentleman of property, twenty-three years old, and in good health. The left edge of the sacrum was laid bare by a long incision from the sacro-iliac synchondrosis to the apex of the bone. This part of the wall of the sacrum had been distended into a scaly mass by the growth—a myeloid tumour. The chisel was introduced forcibly into the sacrum below the left sacro-iliac synchondrosis. The bone was divided by an incision curved towards the right, so that the tumour was completely surrounded by it. A strip of the right side of the sacrum about two centimetres broad remained, and the coccyx was not interfered with. After the bone had been chiselled through, the tumour was separated from the rectum with knife and scissors. The vessels were ligatured with catgut; the wound, which was about large enough to hold a man's fist, was filled with antiseptic gauze. The operation was performed under the spray, and the after-treatment was done antiseptically, with particular attention to drainage. Six weeks afterwards the patient was in a fit state for dismissal, with a superficial granulating sore, and scarcely any discharge. There were never any symptoms of inflammation of

the cord or its membranes. The only evil consequence was that the patient could not retain her water so long as before the operation, and complained of long-continued pain in the rectum after defecation; but these troubles had also, according to later accounts, almost disappeared at the end of the following four months. It is almost superfluous to point out the extreme interest of this case, not only because of the fact that the spinal canal was freely opened, and must have remained open for some time, without any mischief resulting to the cord or its membranes, but also because it indicates a fact which should form part of the creed of modern surgeons—viz., that operative surgery has not by any means reached its limit. Professor Volkmann has added one more region to those to which the surgeon's knife is admissible. Is it not almost certain that the surgery of the future will deal with other and more vital parts? And lastly, it may be wise to reflect that so severe an operation could hardly be undertaken by the boldest surgeon without a firm belief in the efficacy of the safeguards which modern improvements have introduced in the treatment of wounds.—*Med. Times and Gaz.*, Dec. 23, 1876.

34. *On Intra-articular Injuries of the Knee.*—Prof. DITTEL, of Vienna (*Stricker's Jahrbücher*, Hft. 3, 1876), has obtained from experiments on the dead body and from clinical observations, the following points of information with respect to intra-articular injuries of the knee:—

"1. The crucial ligaments are never torn through; but by violent movements of the bones carried beyond the functional limits they may be separated at their attachments. It is almost always the femoral end that is torn away—that of the posterior ligament by over-extension, that of the anterior ligament by over-flexion.

"2. The lateral ligaments may, by hyperabduction or hyperadduction, be torn through or detached either at the femoral or at the tibial end. There will be a separation in the former case of a scale of bone, in the latter of the corresponding semilunar cartilage. The lateral ligaments remain intact under those conditions which produce lesions of the crucial ligaments.

"3. Through violent movement the anterior crucial ligament may, as has been shown in a clinical instance, be torn away at its tibial end, carrying with it the spine of the tibia together with a disk of bone.

"4. Through violent movement in an opposite direction, the posterior crucial ligament, together with a portion of bone, may be torn away from the tibia.

"5. Considerable displacement of the tibial epiphysis forwards in a flexed condition of the leg corresponds to the lesion of the anterior crucial ligament; displacement posteriorly, and into the popliteal space corresponds to the lesion of the posterior crucial ligament.

"6. An abnormal range of the movements of abduction and adduction corresponds to lesion of the lateral ligaments. Whether these be torn through or detached at their insertion may be determined, if there is no swelling of the soft parts, by digital examination and from the presence or absence of a depression.

"7. That separation of a crucial ligament at its long attachment should take place at its femoral end, and hardly ever at its tibial end, is probably due to the fact that the femoral insertion is small, quite circumscribed, and surrounded by articular cartilage, whilst the tibial insertion sends out ramifying fascicles of fibrous tissue by which it is connected to the periosteum."

In discussing the diagnostic signs of fracture of the spine of the tibia, Prof. Dittel states that crepitation cannot be made out with any certainty, and that the free and abnormal mobility of the head of the tibia that one would expect after separation of the anterior crucial ligament, is not always evident in the living subject. The osseous fragment to which the lower extremity of this ligament always adheres may not have been completely detached from the head of the tibia, and in any case the surgeon would naturally be unwilling to convince himself as to the abnormal mobility, from fear lest by too energetic action he might cause pain to the patient, and convert what might probably be only a partial fracture into a complete separation. The most important symptom is a sudden and abundant accumulation of blood in the capsule, which after

the use of the aspirator will be rapidly renewed. Such bleeding may, the author grants, be the result of bruising and laceration of the vessels which supply the capsule and other ligaments, and probably also of a tearing of cartilage, but as bleeding from such sources is usually derived from the smallest vessels, one would not expect it to be renewed after aspiration. On the other hand, bleeding due to rupture of vessels on bone would persist, and form repeated accumulations, since such vessels cannot readily contract, and their orifices are not so likely to be closed at an early period through thrombosis. This renewal of the bleeding after the use of the aspirator in cases of injury to the knee, is regarded by the author as an important diagnostic indication of fracture, although it can afford no help in the determination of the precise seat of the injury.—*Brit. and For. Med. Chir. Review*, Jan. 1877.

35. *On Excision of the Joint between the Os Calcis and Astragalus.*—Excision of certain bones and joints of the foot for the removal of disease are now well-recognized operations, and the most recent experiences seem to confirm the advisability of such proceedings in suitable cases.

Although the existence of disease originating in and confined to the joint between the os calcis and astragalus has been long recognized by surgeons, no attempt was made to act upon the diseased joint alone, and remove by excision its affected surfaces prior to the operation shortly to be described. Some authors advise (*Edinburgh Med. Journ.*, Jan. 1877) that, in disease of this joint, either the entire os calcis or astragalus be excised, and the remaining diseased surface gouged away. Others, as the late Mr. Syme, advise, and have largely practised, amputation at the ankle for this disease.

The apparent difficulty of obtaining free access to this joint, and of removing its surfaces, is, no doubt, the reason which has hitherto prevented surgeons performing re-section of it; but having recently successfully practised a thoroughly efficient method of excising this articulation, Mr. THOMAS ANNANDALE ventures to describe (*Edinburgh Med. Journ.*, Jan. 1877) this method.

The importance of recognizing and treating early disease originating in this articulation, especially after suppuration has taken place, must be acknowledged, for, owing to the situation and connections of this joint, there must always be a peculiar risk of the gradual implication of the surrounding bones and joints.

Having carefully studied the anatomical relations of the joint under consideration, I found that its entire extent could be best exposed without injury to surrounding structures in the following way: The foot having been placed in the extended position, and resting on its inner aspect, an incision, commencing about an inch above the tip of the external malleolus, and carried along its posterior border in a curved direction to the calcaneo-cuboid joint, thoroughly exposes the posterior and external portion of the joint, when the peroneal tendons have been drawn outwards, and some ligamentous bands divided. This incision will be found to run along the inner border of the tendon of the peroneus brevis muscle. The anterior and internal portion of the joint can then be exposed by placing the foot still in the extended position on its outer aspect, and making an incision from the tip of the internal malleolus along the course of the tendon of the tibialis posticus, as far as the prominence of the scaphoid bone, drawing forwards this tendon, and carefully drawing backwards the other tendons and the posterior tibial vessels and nerve. By making the first incisions through the skin and cellular tissue only, and so ascertaining the exact position of the tendons likely to be injured, then cutting down through the periosteum to the bone, and with a periosteal scraper separating to a sufficient extent the periosteum, together with all the other superficial tissues, there is little risk of injuring any of the tendons or other important structures.

Both aspects of the joint having in this way been exposed, it will be found that by means of the chisel and mallet the articular surfaces can be easily and accurately removed, the posterior portion being removed through the external incision, and the anterior portion through the internal one. Should there be any disease in the hollow or fossa between the two articular surfaces, it can be

readily reached and removed with the chisel or gouge through either of the incisions.

I have now to relate the following case, which is not only a proof of the possibility and success of this operation, but is also an illustrative example of the form of disease in which I think that excision may, instead of amputation or removal of an entire os calcis or astragalus, be employed.

Catharine K., age 18, was admitted into my wards, in the Infirmary, on the 20th of March of this year. Her history was, that about two years previous to her admission she severely twisted her right foot. From that time she suffered more or less pain in the region of the joint between the os calcis and astragalus, with swelling of the foot below the ankle. She was treated by rest and the application of warm fomentations, tincture of iodine, and other remedies, but with only very temporary benefit. As her symptoms were becoming steadily worse, she requested to be admitted into the Infirmary.

On admission the symptoms of disease in the calcaneo-astragaloid articulation were well marked. These symptoms were swelling on the lateral and posterior aspects of the foot immediately below the malleoli, tenderness on pressure, and pain when the foot was firmly grasped, and moved laterally and rotated. The ankle-joint was healthy, and the anterior tarsus and portion of the foot were free of disease. The first treatment consisted of complete rest, and the application of soothing means to relieve the pain. Shortly after this a small abscess formed on the external aspect of the joint, and it was opened and the wound dressed with antiseptic precautions. The wound was healed in about a month, and the foot, ankle, and leg were then confined in pasteboard splints and a starch bandage. With this appliance she was sent to the Convalescent Hospital for six weeks, but on her return little change had taken place in the symptoms. The splints were reapplied, and she went home, but returned again on the 20th of July, as the disease was no better, but rather worse. The swelling and pain were now more marked, and in addition there was a feeling of deep fluctuation over the outer aspect of the joint. On account of this aggravation of the disease she was re-admitted, and on the 29th of August I exposed the lateral aspects of the joint in the way I have described, and finding suppuration with caries of its articular surfaces, more particularly of those of its posterior portion, I removed with the chisel the entire articular surfaces of the joint—that is to say, the articular surfaces on the upper aspect of the os calcis, and the corresponding surfaces on the under aspect of the astragalus. The interosseous ligament was softened and in part destroyed. After the diseased surfaces had been removed, a drainage-tube was passed completely through the joint, and its open ends allowed to project at either wound. The operation was performed with antiseptic precautions, and the usual antiseptic dressing was afterwards applied and continued until the 10th of October, when the boracic-acid lotion was substituted for it. The patient's progress after the operation was excellent, and the wounds gradually contracted, and were soundly healed on the 22d of November.

At this date the appearance of the foot was natural, and the movements at the ankle-joint were free and perfect. The patient could bear good weight upon the foot, and it promised to be in time quite strong and useful.

36. *Neuroma of the Median Nerve; Excision and Suture of Nerve.*—At the meeting of the Surgical Society of Paris, on November 8, M. NOTTA brought forward this case. A tumour of the size of a hazel-nut existed on the anterior surface of the forearm, presenting all the objective and subjective symptoms of a neuroma of the median nerve. This was excised, and the ends of the nerve (retracted about three centimetres) were brought into contact by a metallic suture. After the operation, anæsthesia was proved to exist in the parts supplied by the median nerve. Formication was soon felt. On the thirteenth day sensibility reappeared in the ring finger; on the sixteenth on the thenar eminence; elsewhere the return was more gradual; eight months after the operation, the patient could feel as well with one hand as with the other. At the same time, peripheral ulcerations on the index and middle finger had healed. Microscopic examination showed that the tumour was a fibro-sarcoma.

in the substance of the median nerve, with the nerve-fibre separated and stretched over it. M. Verneuil said that in his opinion to employ sutures to obtain reunion of nerves was useless, and founded on a wrong principle. In such cases, sensibility always returned from the periphery towards the centre, and was due to collateral innervation, and not to the reformation of the nerve and the passage of nervous impressions along newly formed nerve-fibres. Sufficient time had not elapsed for this to have taken place in M. Notta's case, where sensibility began to return on the thirteenth day. So, too, in excision of the lower jaw, where the inferior maxillary nerve was destroyed, sensibility began to return the day after the operation, and first in the middle line. He would quote the case of a young lady brought to him with the fingers of one hand extremely flexed upon the palm, the superficial flexor tendons and the median nerve being embedded in a cicatrix resulting from ulceration due to the faulty application of a splint. The fingers were movable and sensitive. In the course of an operation, which was attempted to isolate the flexor tendons, the median nerve was cut across. After the operation, however, sensibility was in no way affected, its preservation being obviously due to the collateral innervation of the parts. [If reference be made to an article on this subject by the translator in the *British Medical Journal*, April 1, 1876, the following explanation by Dr. Richet of "collateral innervation" will be found. The terminal filaments of the radial, median, and ulnar anastomose amongst themselves to form loops, from which come off the filaments which end in the touch-corpuscles. As both loops and filaments are compound, containing filaments from the median, radial, and ulnar, section of one of these trunks is powerless to deprive of sensibility the corpuscles which are the essential organs of touch.]—*London Med. Record*, Dec. 15, 1876.

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37. *Spasmodic Contraction of Muscles treated by Excision of Nerves.*—Mr. W. SPENCER WATSON, at a late meeting of the Royal Medical and Chirurgical Society (*Med. Times and Gaz.*, Jan. 6, 1877), read notes of the case of a young lady, aged nineteen years, who was the subject, when nine months old, of so-called infantile paralysis. The right arm and right leg had ever since been contracted at the wrist and ankle. The deformity of the foot, however, had been remedied by division of the tendo Achillis in infancy, and the patient had been able to walk with a limp ever since. The right arm, forearm, and hand had, besides the permanent contraction of the flexors, been more recently subject to violent spasmodic movements which had produced exhaustive debility and a tendency to hysterical paroxysms. After the failure of general remedies and of tenotomy of the more prominent flexors, Mr. Watson divided and excised a portion of the median nerve at the elbow. This relieved the muscular spasm to some extent, and somewhat reduced the previously heightened temperature of the limb. The deep flexors and adductors, however, continued to be subject to violent spasmodic movements, and the wrist continued permanently flexed. Mr. Watson, therefore, with Sir William Gull's sanction, excised a portion of the ulnar nerve behind the inner condyle of the humerus. The contracted muscles were at once released, and the forcibly adducted thumb and little finger set free. The total effect of all the operations has been decidedly beneficial to the patient, but she still complains of pain in those parts now paralyzed as to sensation and motion. The operations of neurectomy and tenotomy were undertaken in this case on the hypothesis that the original central lesion was become secondarily aggravated by the constant peripheral irritation either associated with or caused by the convulsive muscular movements. The primary mischief was central; the peripheral irritation reacted upon the centre. A vicious circle of enervative nerve-irritation was thus established. The object of the operations was to break the continuity of that circle.

Mr. T. Nunn had recently seen a lady the subject of continuous spasm in the flexors of the leg. This seemed to follow on a blow on the spine. Here division of the nerve would probably have been useless. In Mr. Spencer Watson's case he did not think so much of the nerve need have been removed, as temporary division might have sufficed, and the nerve would have grown again.

Mr. Hnlke said that if temporary destruction of the conductivity of a nerve

was all that was required, stretching would have been enough for that purpose.

Mr. Barwell spoke of a soldier, the subject of epilepsy, whose arm had been amputated, but at the extremity of the stump the nerves had formed swollen masses. These were removed, the nerves stretched, and no more epileptic fits ensued.

Mr. T. Smith said that if the pain was relieved by chloral and bromide of potassium, would it not have been better to trust to these for a time on the chance of the disease wearing itself out, especially as there seemed to be no permanent shortening of the muscles. Mental emotions had a strong influence in such cases, as was shown in one under his care, where the subcutaneous injection of water sufficed to cure the patient.

Sir James Paget, who had seen Mr. Watson's case, was quite certain that no injection of water would have cured such a patient. Here there was absolute shortening of the muscles, which commonly ended in fixation. The spasm was undoubtedly mainly reflex in its character, and in such cases the division of nerves was of the highest importance; but often section of the nerves was not enough. In a case which had come under his notice there had been fracture of the radius; distortion followed, and finally almost fixation. Section of the nerve did good for a time, but the spasms began to return. Then followed fracture of the opposite radius, and the symptoms began to resemble those which had followed the accident on the other side; but forcible and really painful fixation on splints did much good. Here, too, section of the nerve was most useful.

OPHTHALMOLOGY.

38. *Prelachrymal Oily Cysts*.—Under this designation Prof. VERNEUIL, recently brought before the Société de Chirurgie (*L'Union Méd.*, January 6) a pathological condition which, he believes, has not been described by writers on affections of the eye. By a curious coincidence, he has met with three examples within a few years. The first of these occurred in 1874, in a young man who had a cyst at the inner angle of the eye, of the size of a cherry-stone, placed in front of the lachrymal sac. It had been there a very long time, and was indolent, colourless, and irreducible. M. Vernuil, believing it to be a tumour of the sac, punctured it, and drew off the contents by a Pravaz syringe, and was much astonished to find that the liquid withdrawn had all the appearance of olive oil, which also it resembled in chemical characters. The tumour disappeared, and the patient quitted the hospital at once and did not return.

In 1875 a young girl, aged nineteen, was brought to him for the purpose of having a tumour removed from the angle of the eye, which, she said, she had had from childhood, but which had increased much of late. It was placed a little above the lachrymal sac, was very hard, and of the size of an ordinary cherry, greatly distending the skin that covered it. M. Vernuil, believing that he had to do with a congenital cyst of the orbit, made an incision with the intention of cauterizing its wall. Hardly had the bistoury penetrated, when there issued a filiform jet of what looked just like oil, about a gramme of which was caught in a watch-glass, but was afterwards lost. Enucleation was sought to be practised; but, owing to the firm adhesions to deep-seated parts, only about two-thirds could be removed. In this crystals of cholesterine and margaric acid were detected.

A third case presented itself last November, in the person of a man, aged twenty-one, who had a tumour the size of an almond, which occupied the whole of the inner angle of the orbit. The skin was extremely distended and transparent. It had existed from early infancy, and was now very firm and resisting, being deeply attached to the subjacent parts, and possessed of no real mobility. It was quite indolent, and never had caused any disturbance of vision or obstruction to the flow of tears. A puncture practised by Dieulafoy's

aspirator allowed about two grammes and a half of a liquid exactly like olive oil to be collected, the tumour immediately subsiding after its evacuation. During the two days the man remained in the hospital, no reproduction of the liquid took place. M. Perrin stated that he had met with two such cases, the evacuation sufficing for their cure. M. Le Dentu said that he also had met with such a case in an infant.—*Med. Times and Gaz.*, Feb. 10, 1877.

39. *Primary Lupous Disease of the Conjunctiva*.—Dr. NEUMANN, at a recent meeting of the Imperial Royal Medical Society of Vienna, said that the phenomenon of lupous disease of the conjunctiva consisted at first in proliferations, bleeding on the slightest touch. After existing some time they produced shrinking of the cornea, through the formation of meshes and fibres of connective tissue in them. The morbid process commenced in the ocular as well as on the palpebral conjunctiva; it was more frequent on the lower eyelid than on the upper. The rarity of the disease was shown by the fact that Dr. Neumann has been able to find records of only four cases, published by Dr. Arlt and Dr. Sattler. In a case recently observed by Dr. Neumann, the patient was a girl who, in 1871, suffered from frequent stillieidium lacrymarum. Shortly afterwards swelling and redness of the eyelids, and fungous growth from the conjunctiva, set in. Dr. Rabl removed the fungosity and applied afterwards nitrate of silver. In spite of treatment, however, the destruction of the conjunctiva became very extensive. Three years later lupus appeared on the nose, and was cured by the application of nitrate of silver. The changes in the eye were the following: The upper eyelid was much swollen, and showed a cicatricial contraction; the eyelashes were wanting. There was symblepharon of both the upper and lower lids; and a deep depression was visible on the cornea. The patient had only a quantitative perception of light, and had some pain in moving the eyes. Dr. Neumann exhibited microscopic preparations of the disease taken from the conjunctiva. They showed a remarkable enlargement of the papillæ, epithelium and between them, and the characteristic fine network and enormous vascularity, and finally, the presence of giant-cells in the lupous growths. The latter (giant-cells) have also been lately observed by Dr. Laskiewitz, in inflammatory proliferations of the conjunctiva. Dr. Hebra related two cases of lupus of the eyelids that had come under his observation, in which also there was lupus of the skin. In both cases a cure was effected by the application of solid nitrate of silver. In one the patient came again under notice on account of a return of the disease in the skin—the eye, after a lapse of ten years, remaining unaffected.—*London Med. Record*, Jan 15, 1877.

40. *Changes of the Ciliary Processes during Accommodation*.—Prof. J. HJORT, of Christiania, narrates (*Nordiskt Medicinskt Arkiv.*, 8 Bd. No. 17) the case of a workman who was severely injured by an explosion of dynamite. In addition to his other injuries, there was also a complete absence of the iris of the right eye. The only other lesion to be perceived in the eye was a vertical wound of the cornea about 3 mm. in length. The lens remained in its normal position, the zonula of Zinn was intact, and the vitreous transparent. Vision soon became perfect. The ciliary processes could be seen very distinctly with oblique light, with the ophthalmoscope, and still better with Brücke's lamp under oblique illumination. The latter rendered it easy to study the relations of the ciliary processes during accommodation, and also their changes after the instillation of calabar extract. The results of these observations are, that, by the act of accommodation or the contraction provoked by the calabar:

1st. The dark margin of the lens became broader.

2d. The ciliary processes approached the axis of the eye and became swollen.

3d. The distance between the margin of the lens and the ends of the ciliary processes (the zonular space of our author) did not appear to suffer any change.

4th. The changes observed did not occur instantly, but required a very appreciable time, though not very long. The relaxation of the accommodation also occurred gradually.

The distance between the margin of the lens and the sclerotic was increased during the accommodation, and just sufficiently to correspond to the advancement of the ciliary processes.

Under the action of atropine, it may be that the ciliary process moved backwards a very little, but it was impossible to notice any change of the zonular space.

Prof. Hjort has also examined several albinos, and he has found that the phenomena presented were precisely the same, except that in them the observations were made with greater difficulty.

These observations fully confirm the theory of accommodation formulated by Helmholtz, Graefe, and most modern physiologists. Becker, who has examined the eyes of several albinos, differs in this that he has found that the ciliary processes are drawn backwards during the accommodation.

Prof. Hjort had observed the same phenomenon, but he explained this, at first, by the insufficient strength of the calabar used, later and principally by the fact that the retrograde movements of the ciliary processes are only illusory, and the latter become concealed further behind the scleral margin when the eye makes a slight outward movement during the examination. This happened once to our author, and probably also led to Becker's error. This explanation is also confirmed by the observation that the distance between the margin of the lens and that of the sclerotic is also diminished at the same time.—*Med. Record*, Jan. 20, 1877.

41. *Treatment of Amblyopia by Inhalation of Nitrite of Amyl.*—Mr. H. R. SWANZY, Ophthalmic Surgeon to Stevens' Hospital, reports (*Dublin Journal of Med. Science*, Jan. 1877) four cases of amblyopia which were treated by a new method, namely, by inhalations of nitrite of amyl.

The first case was that of a coastguard whose sight had been impaired after a fortnight's exposure to the glare of the sun whilst whitewashing the coastguard premises. Upon examination it was found that with the right eye he could count fingers when held up at a distance of four feet only. The ophthalmoscope showed the vitreous humour of this eye to be filled with a diffuse opacity, rendering any view of the fundus oculi impossible. The vision of the left eye amounted to something between $\frac{1}{3}$ and $\frac{1}{4}$ (L. Sn. at 14') of the normal standard. It could make out type No. 4 $\frac{1}{2}$ of Snellen at 8 inches with difficulty. He complained a good deal of a broken irregular appearance of the letters, and of temporal headache. The ophthalmoscopic appearances of the left eye were perfectly normal.

Treatment was commenced by an application of Heurteloup's artificial leech to the temples, from which no benefit resulted. On the 17th of July Mr. Swanzy "caused the patient to inhale 10 drops of the nitrite of amyl from a small bit of cotton-wool. Soon after he had quite recovered from its effects, I made him inhale ten drops more. Five minutes after the effect of the second inhalation had worn off, I tested his vision, and found that a remarkable improvement had taken place for so short a space of time. He could now spell XL of Snellen at 14 feet—that is to say, his vision had improved from $\frac{1}{3.5}$ to $\frac{1}{2.8}$ of the normal standard. He was also able to read No. 4 $\frac{1}{2}$ with greater ease, remarking that the words seemed less confused than previously.

"Upon testing the patient's vision next day, I found that it had not relapsed, but that the improvement which had been effected continued. He then got 10 drops to inhale. The peculiar symptoms produced by the inhalation continued about two minutes, and vision was not improved while they lasted. As they were just wearing off vision was slightly dimmed, but this disappeared in three or four minutes; 10 drops more were then given, and vigorously inhaled. About half a minute after the effect began, the letters seemed double their real size, but still in mist and broken. Two hours later the vision for distance was found the same as after the inhalations on the first day, but near vision was improved so that he could read No. 3 $\frac{1}{2}$ of Snellen at 8 inches slowly.

"On the 20th he was beginning to see XXX of Snellen at 14 feet. I gave him three inhalations; and about three-quarters of an hour afterwards he could spell XXX at 14 feet almost perfectly. No. 3 was read slowly at 8 inches.

"On the 21st vision was no better, nor did two inhalations on that day effect any further improvement.

"On the 22d vision still remained the same, but, after two inhalations, the sight became so improved that XXX could all be distinguished at 14 feet. He still complained of the haziness, although he said it was lighter. He said also he could only see the letter he looked at and the one next it, while the others were quite in mist.

"On the 23d he got two inhalations.

"On the 24th vision was not any better, but after two inhalations he said he could make out XXX much more clearly. This vision now was very nearly half of the normal standard, and I did not succeed in producing any further improvement in it. I continued the inhalations of nitrite of amyl for a time, and tried some hypodermic injections of the nitrite of strychnia, but without avail. Before dismissing him from hospital (8th August) I again examined the field of vision with the perimeter, and found an improvement in the boundaries for red and blue, but very little in that for green.

"On the 20th of September he returned, complaining that about eight days previously the sight of the left eye had again become dim. He thought he had exposed himself too much to the bright glare of the sun. Bright light always gives him uneasiness and pain in the temples. I found his vision reduced as low as on the first day I saw him. After two days' treatment with the nitrite of amyl his sight was restored again as before. He was cautioned against exposure to strong lights in future."

In the second case the improvement effected by the nitrite of amyl treatment in the course of six weeks was such, that the patient could at the end of this time see four times as well as at the beginning. Before dismissing him from hospital I again examined his field of vision, and found that the power of perception of green had returned and occupied a normal extent of the field.

In the third case the vision of each eye went on improving by degrees until it had reached in the right eye almost to $2\frac{1}{2}$ (XXX (?)) at 14 feet), and in the left to more than $\frac{1}{2}$ (XL at 14 feet) of the normal amount. No further improvement could be effected. Probably perfect vision would have been restored had it not been for the irregularities on the cornea.

The only disagreeable consequences which resulted from the inhalations of amyl were in this case. While the immediate effect of the inhalation lasted, the Schneiderian mucous membrane secreted copiously, and there was an abundant flow of tears; and after a few days the inside of the nose became very sore.

The results in the fourth case were unsatisfactory owing to the treatment being interfered with by the intemperate use of spirits and tobacco, but still the beneficial effects of the inhalations of nitrite of amyl were evident.

Besides the foregoing, says Mr. Swanzy, I have tried this method of treatment in one case of advanced atrophy of the optic nerve, and in two cases of neuro-retinitis, but without any beneficial result.

The only published case of amaurosis or amblyopia treated by the nitrite of amyl, of which I am aware, occurred in the number of the *Berliner Klinische Wochenschrift* for 24th April last. It is by Dr. Steinheim, of Bielefeld, and it suggested the trial of the drug to me in the above cases.

Dr. Steinheim's patient was a married woman, who completely lost the sight of both eyes after a severe hemorrhage, connected probably with miscarriage. The ophthalmoscope displayed a grayish-white opacity of the optic papillæ, which were somewhat swollen and with indistinct margins. On the sixth or seventh day after the blindness came on, Dr. Steinheim admitted the patient into his hospital, and gave her 8 drops of the nitrite of amyl to inhale. As soon as the effects had passed off he gave her a second similar inhalation.

About fifteen minutes later sight began to return to the left eye, so that fingers could be counted at a distance of four or five feet. The right eye still remained blind. The patient was kept in a dark ward, and received good diet and wine. Nitrite of amyl inhalations were given several times a day. On the 30th of May the patient could count fingers at fourteen feet with the left eye, although only with the upper part of the field of vision. The lower part

of the field did not recover its functions, nor did any part of the retina of the right eye. The appearance of the optic disks had altered to that of atrophy. Dr. Steinheim says he has had very satisfactory results from the treatment in other cases, which he proposes to make known at a later period.

I shall not venture to draw any definite conclusions from the cases I have narrated as to the precise indications for the employment of nitrite of amyl in amblyopia. We must wait for wider experience to establish these. It is evident, however, that there are some cases in which the treatment has a remarkable effect, and my object has been to draw attention to this fact, so that others may be induced to try the method.

As to the *modus operandi* of the treatment, I have been unable to do more than form a conjecture. The physiological effect of an inhalation of nitrite of amyl is to paralyze the vaso-motor nerves of the head and neck. I am inclined to think it is the increased supply of blood to the impoverished nerve-centres, caused by the dilatation of the capillaries, that is the immediate cause of the improvement in vision.¹

I may here remark, that in none of my cases did the ophthalmoscope show any alteration in the calibre of the retinal vessels while the primary effects of an inhalation lasted. This coincides with the observations of Steinheim, and of Sümisch and Stammeshaus,² but is at variance with those of Aldridge.³

MIDWIFERY AND GYNÆCOLOGY.

42. *Glycosuria during the Puerperal State.*—In a note communicated to the Biological Society of Paris (*Gaz. Méd. de Paris*), M. GUBLER states that a transitory glycosuria may occur. His conclusions are these:—

1. Glycosuria is not a normal phenomenon of the state of lactation.

2. It shows itself on the suspension or premature suppression of lactation, provided the nurse be in good health and not affected by any serious constitutional disturbance.

3. In other terms, glycosuria only appears as a consequence of a rupture of the equilibrium between the production and consumption, giving rise at first to a lactosemia comparable to super-albuminosed blood from which is derived the albuminurie dyscrasia.

He has never seen transitory albuminuria accompany glycosuria in these pathological conditions.—*London Med. Record*, Feb. 15, 1877.

43. *The Combined Method of Uterine Examination.*—Prof. HEGAR, of Freiburg (*Volkmann's Sammlung Klinische Vorträge*, No. 105), gives some excellent hints for simultaneously examining the uterus and its appendages by one hand placed on the abdominal wall, and by the forefinger and thumb of the other in the rectum and vagina respectively. The thumb is first to be passed into the vagina, and placed on the cervix uteri, if it can be reached; then the finger is passed into the rectum, and up over the sacro-uterine ligaments (which form a good regional guide), to the posterior surface of the uterus. The hand on the abdomen is now pressed back towards the sacrum, and so the uterus is held between the fingers of the two hands. In the same way the thumb can be placed on the front of the cervix and corpus uteri; and so, with the help of the hand outside, fix and draw down the organ so as, to a certain extent, to palpate

¹ Bernheim (*Pflüger's Archiv*, viii. 253-259, 1873) and Eulenburg and Guttman (*Reichart and Du Bois' Archiv*, 1873, v. 620-625), find that nitrite of amyl paralyzes the vaso-motor centres, while Pick's experiments tend to prove it to be a muscle-poison (*Deutsch. Archiv, f. Klin. Med.*, xvii. p. 129).

² *Centralblatt f. d. Med. Wissensch.*, No. 55, 1873.

³ *The Ophthalmoscope in Mental and Cerebral Diseases.* West Riding Lunatic Asylum Reports, vol. i., 1871.

it. In this way Professor Hegar has almost invariably succeeded in replacing a retroflexed uterus by the hand alone, "even under the most difficult conditions."

The patient must, for this method to succeed, be placed on a table or high couch, and the bladder and rectum must be previously evacuated. There are a few special difficulties in its application:—

1. *The abdominal walls may be very tense*, especially during the first examination, owing to the patient holding her breath, and resisting the physician, from fear and modesty. Much of the trouble from this cause passes off at the second visit. Position will help much. Professor Hegar prefers the horizontal dorsal posture, the head but slightly raised by a thin cushion, and the thighs well drawn up. The external hand can often be pressed deeper down during the deep jerking expirations of sobbing and crying than at other times. To imitate the relaxed condition of the parts which is found in women soon after confinement, Professor Hegar recommends that the patient shall drink as much fluid as possible, and retain her water as long as possible just before examination; or, better still, as much water as possible should be injected into the rectum and bladder, and kept there as long as the patient can retain it. If all these means fail, she must have ether or chloroform.

2. Another difficulty may arise from the *narrowness and shortness of the vagina, and the tough and unyielding state of its wall*. This is best remedied by distending the upper part of the vagina with an India-rubber air-pessary, or plugging it with wool twenty-four hours before examining. taking account, of course, afterwards of the possible artificial dislocation of the organs thereby produced.

3. The last difficulty may arise from the most important parts being situated so high that the fingers cannot reach them; or from everything in the pelvis—tumours, organs, inflammatory exudations, etc.—being so pressed together that the special limits of each cannot be made out. Here Professor Hegar, who rejects Simon's plan of introducing the whole hand into the rectum as dangerous, fixes the cervix uteri with a blunt-pointed forceps fixed into one or other lip, or even into both, and then gently draws it down to find out what amount of displacement it can bear. With one or two fingers of the other hand in the rectum he explores the posterior surface of the uterus and its lateral angles. To reach the fundus the handle of the forceps is given to an assistant to hold firmly, and the hand thus set free is made to press the uterus, through the abdominal wall, downwards and backwards, and so bring it within reach of the rectal finger. Slight lateral movements of the handle of the forceps aid somewhat. This method gives specially good results in cases of anomalous development of the uterus (uterus bicornis, etc.), as well as in all kinds of tumours of the uterus. If a tumour, for example, lies entirely or in part in the pelvis, so as to press closely on the uterus, or even to be wedged in between it and the pelvic wall, by drawing the uterus down somewhat, or moving it to one side or the other, the rectal finger can generally make out the limits of the uterus and the tumour, and decide on their connections with each other. In this way, says Professor Hegar, a growth which seemed indivisibly united with the organ is proved to have a separate existence. Other advantages of this method are insisted on by the author, but gynæcologists cannot do better than study the whole essay for themselves.—*Med. Times and Gaz.*, Jan. 6, 1877.

44. *Chronic Inversion of the Uterus*.—Dr. MATTHEWS DUNCAN, at a late meeting of the Medico-Chirurgical Society of Edinburgh (*Med. Examiner*, Feb. 15, 1877), read a most interesting and thoughtful paper on Chronic Inversion of the Uterus. The cases he had seen were five in number. Of these, two were acute, one proving fatal and one being cured; three were chronic, and of these two were cured by taxis, while one died after amputation of the organ. In his first case violent sickness came on at the eighth calendar month of pregnancy. All anti-emetics failed, and therefore premature labour was induced. The sickness however continued, and five minutes after birth of child flooding came on, and inversion of uterus followed. The woman ultimately died half an hour after the child was born. On post-mortem examina-

tion the body of the womb was found inverted, the cervix not being involved in the inversion. In his second case inversion occurred forty-five minutes after birth of child. The uterus was easily replaced, and the woman did well. In the first of his three chronic cases replacement was ultimately secured, but only after many failures. In his next case partial replacement was obtained after incision of uterus. In his last case he removed the inverted organ. Death resulted from peritonitis. In conclusion, Dr. Duncan remarked that the cases showed (1) that the *cervix uteri* played no part in the inversion; (2) that the treatment was unsettled. Removal of the organ was only an evasion of the difficulty. Long-continued pressure or forcible taxis was frequently successful, but sometimes failed. In the operation the cervix presented no difficulty, and its incision was only of use indirectly. The President, in remarking on the interest of the paper, brought clearly out the importance of early reduction, showing how the risks and difficulties of reduction increased with the duration of the displacement.

Dr. Keiler showed by some statistics how rare this displacement was. In 200,000 cases of labour at the Dublin Hospital, there had been one case only of inversion. He had himself long ago seen one case of acute inversion of the uterus with the placenta attached. He removed the placenta, and then restored the uterus to its position. He saw another recent one with the late Dr. Dumbreck, in which after two days' inversion he succeeded in restoring it by pressing with the fingers of one hand into the cup-shaped depression above the pubis and with the other pushing up from below. It took two hours to do, but eventually the woman did quite well. In another case, which he saw with Dr. Archibald, of St. Andrew's, the inversion was chronic in consequence of a fibrous tumour. After years, in which many operative procedures had been proposed and tried, the uterus was still down, but menstruation had now ceased and the uterus was becoming atrophied. Dr. Keiler then gave an interesting and amusing account of a trial in which he had once been engaged, in which a woman brought an action for 1000*l.* against a practitioner who had removed a chronically inverted uterus with the *écraseur*. With reference to the causation of inversion he did not believe it was due to traction on the cord during or after delivery.

45. *Excision of the Uterus.*—The excision of the whole uterus is not a novel operation in the annals of surgery. The rarity, however, with which it has been performed, and the still greater rarity with which it has been successful, invest with much interest the details of a case communicated by Dr. HENRIC, of Leipzig, to the forty-ninth Naturforscher-versammlung, recently held at Hamburg. As the patient had survived the operation eight months, and the original disease, being cancer, presented no evidence of recurrence, the operation is one of remarkable success, although the conditions were in some respects unusually favourable.

In the performance of the operation the uterus was first separated from its connections with the anterior wall of the vagina by a knife and scissors; next it was separated by the fingers from the anterior fold of the peritoneum; and then, since the vessels in the broad ligament bled but little, the fundus of the uterus was drawn forwards, first with two fingers and afterwards with a hook, so that its connections with the posterior wall of the vagina were divided without difficulty. The growth had invaded the posterior vaginal wall, and one tubercle involved the wall of the rectum, and in its removal a small opening was made in the rectum. The total length of the uterus was five and a half inches, and the carcinoma had invaded the whole cervix. It was found that the left ovary and Fallopian tube, adherent to the uterus, had been removed with it, and about one-half of the right Fallopian tube. Thus the uterus had not been separated from the peritoneum as intended, but the tissue which was attached to the base of the uterus showed that old peritoneal exudations had filled up and inclosed the pelvic portion of the peritoneal cavity, in consequence no doubt of perimetritis. The opening in the rectum was closed with the needle, and a piece of ice put into the wound; there was little subsequent hemorrhage, and the wound was cleaned afterwards by injections of salicylic acid twice a

day. Considerable peritonitis followed, the temperature of 100° being reached on the fifth day after the operation, but it gradually subsided. The recto-vaginal fistula was closed by an operation four weeks after the excision of the uterus, and with the exception of a small superficial abscess, from some enlarged glands, the patient's progress was most satisfactory. Four months later a small soft growth appeared in the neighbourhood of the fistula, and was removed without difficulty, the fistula having become almost closed and up to the date of the communication no further symptoms of recurrence had manifested themselves, and the patient's health continued good.

The prolapsed uterus has, of course, been many times removed by the knife or ligature, but in most cases with a fatal result. Dr. Hennig has collected twenty-one cases in which the unprolapsed uterus has been removed. Andreas a Cruce removed a "scirrhus" uterus per vaginam in 1560, and a similar operation was performed at the end of the eighteenth century by Wrisberg and by Monteggia. In 1828 Blundell removed the uterus *in situ*, and the patient lived for a year, dying ultimately of a recurrence of the cancer for which the original operation was undertaken. The method of excision by separation from the peritoneum was first proposed and performed with success by Langenbeck. His patient survived the operation for twenty-six years, but it was found that the uterus was not cancerous, as had been supposed. It is clear from the details of these cases that a pathway is opened to the experimental surgeon, which is not without promise of reward for cautious pursuit.—*The Lancet*, Jan. 13, 1877.

46. *Cyst of the Broad Ligament; Removal; Death Seventy-Six Hours after the Operation.*—In the *Allgemeine Wiener Medizinische Zeitung* for October 31, 1876, Dr. ARNING, of Hamburg, relates the case of a patient who came under his care in November, 1873. She was forty-five years old; had had six children, the youngest four years old; menstruation was regular. Since 1871 the abdomen had been gradually enlarging, but she had suffered little in general health, except occasional colicky pains. The tumour was rather towards the left side, fluctuation superficial and uniform. *Per vaginam*, the tumour was felt in front and somewhat to the left of the uterus, which was retroverted, and somewhat enlarged, the sound passing easily. A thin band, somewhat tender, was felt passing across the front of the tumour, and taken to be the Fallopian tube. The tumour continued to increase, and on December 6th it was tapped. The fluid was colourless, of specific gravity 1007. It contained a small quantity of albumen and of sugar, with a little cholesterine and urea. After its evacuation nothing could be felt of the tumour. It was concluded that it was probably a cyst of the left broad ligament. For some time the cyst did not refill. In the spring of 1876, the patient suffered from eezema, after the cure of which it again began to enlarge, and during the winter of 1874-75 its size became considerable. In June, 1875, it was tapped for the second time, and a slightly greenish, clear fluid evacuated. It was of specific gravity 1017, contained albumen and urea, but no paralbumen nor cholesterine. After the end of September the cyst again began to fill. In May, 1876, Mr. Spencer Wells visited Hamburg, and saw the patient. His opinion was that the cyst was not parovarian but ovarian, and that secondary cysts could be felt at its lower part to the left side, and he therefore recommended an operation. He thought also that there was a short pedicle, and that the clamp could be used.

The operation was performed on May 16th. After evacuation of the fluid the large intestine came into view as the cyst was drawn forward, and it was seen that the peritoneum passed at once from it over the surface of the tumour. It was thus a cyst of the broad ligament, which had grown into the meso-colon of the sigmoid flexure. The mass taken by Mr. Spencer Wells for a secondary cyst proved to be the healthy left ovary. The peritoneal covering of the cyst was divided, and it was completely removed by enucleation. A small pedicle, containing the vessels, and the Fallopian tube, was obtained by splitting the broad ligament. This was tied with carbolized gut and dropped, and a few vessels were secured in the same way. On the morning of its second day the pulse rose to 140, and the temperature to 102.2° F. On the third day the wound

was opened, a drainage-tube passed through Douglas's fossa into the vagina, and the peritoneal cavity washed out with carbolic acid. The patient sank, however, the following morning. The layers of the broad ligament were found to have united, but, when they were separated, fetid gas escaped from the cellular tissue beneath. No hemorrhage had taken place. The author concludes that the diagnosis between ovarian and parovarian cysts is, as yet, sometimes uncertain. He believes also that it cannot be ascertained whether a parovarian cyst is pedunculated or not, and that, if it be not, the operation for its removal is extremely dangerous, because the subperitoneal cellular tissue must be laid open. He thinks that even repeated tapping is preferable to the major operation, so long as the general health does not greatly suffer.—*London Med. Record*, Feb. 15, 1877.

47. *The Treatment of Suppurating Dermoid Cysts of the Ovary*.—Dr. BERNUTZ contributes an article on this subject to the *Archives de Tocologie* for October, 1876. He points out that dermoid or hair containing cysts may present themselves under two aspects; first, their simple condition, in which they present the normal characters belonging to tumours of this kind, while they remain in their physiological state; secondly, an inflamed condition, which almost invariably leads to suppuration, and may give rise to the most serious results. The diagnosis is generally a very obscure one, for the most important sign by which dermoid cysts near the surface of the body are distinguished, namely, the fact that the tumour has been observed ever since birth, is absent. For, in its uninfamed state, an intra-pelvic dermoid cyst is completely indolent, and gives rise to no functional disturbance whatever, so that the subject of it is almost always unaware of its existence, unless some casual circumstance has led to a pelvic examination being made. In its suppurating state the dermoid cyst generally presents the aspect of an obscurely fluctuating tumour situated at one side of the uterus, and filling the corresponding iliac fossa, and thus is liable to be confounded with a phlegmon of the broad ligament. The differential diagnosis is chiefly to be based on the history of the malady having been chronic in character and ill-defined at first; pain in the region affected having preceded for a long time any considerable constitutional disturbance; while the gradually increasing severity of the affection has at length rendered absolute rest on the part of the patient necessary. In the uninfamed state, the discovery of a globular tumour, somewhat firm, but having in parts a doughy consistence, situated in one broad ligament, being also completely indolent and of quite indeterminate duration, may justify a probable diagnosis of a dermoid cyst. Such a diagnosis, however, can never be absolute, and such a tumour should never be interfered with in any operative way.

The following illustrative case is related. The patient was thirty-one years of age. At the age of twenty-four, being then unmarried, she was delivered normally of her first child. Returning very soon after delivery to her work as domestic servant, she suffered some hypogastric pain, and by this means was led to notice the existence of an indolent swelling of small size in the right iliac fossa. She was confident, however, that the swelling was not the seat of the pain. At the age of twenty-nine, in 1874, the patient married. Within a month after marriage she felt, for the first time, acute but transient pain in the tumour, which did not then appear to have increased in size. She soon became pregnant, and was delivered naturally on Good Friday, 1875. After delivery it was observed that the tumour in the iliac fossa was very manifestly larger than before the pregnancy. She left her bed on the tenth day, and five days later was attacked by severe pain in the situation of the tumour. In a few days the pain was lessened, but did not disappear, although she was able to suckle her child and attend to domestic duties. Menstruation recurred a month after delivery, notwithstanding lactation, and continued to be regular and abundant, bringing an increased intensity of pain at each period. The severity of the pain and frequency of its recurrence much increased during January and February, 1876, and on March 6th the patient was admitted into the Charité Hospital. She then had no cachectic appearance, although she was pale and thin, and there was neither fever, rigors, nor night-sweats.

The right iliac fossa was rendered prominent by a globular tumour, whose diameters were 10 and 12 cm. (4 and 4.75 inches). It appeared to be adherent to the abdominal wall, and deep fluctuation could be felt in it, as if its walls were very thick. Its base could be reached with difficulty by the vaginal touch in the anterior part of the right cul-de-sac. The cervix uteri was pushed backward and to the right, and completely immovable; the body of the uterus was felt in front. By the use of the sound it was found that the bladder was pushed far to the left. On March 16th an exploratory puncture was made with a small trocar. About a teaspoonful of a thick, dirty-gray, caseous fluid, quite free from smell, was withdrawn. It contained a large proportion of molecular fat, completely soluble in ether, and some minute, reddish hairs. On the 25th of March and the 4th and 12th of April, the puncture was repeated with a large Chassaignac's trocar, and attempts were made to bring the lower end of the canula within reach from the vagina, with a view of making a counter-opening there, and so emptying the cyst more effectually of the caseous material. The intervening tissue, however, was found to be too thick, and Dr. Bernutz contented himself with withdrawing a further quantity of the same thick fluid. The condition of the patient became worse after puncture, and the temperature rose to 46° C. On April 15th the patient had had several rigors, and fetid purulent fluid, mingled with gas, escaped from the point of puncture. An incision, 6 cm. (2.4 inches) in length, was therefore made into the cyst, which proved to be adherent to the abdominal wall. It had been intended to make preliminary applications of Vienna paste, in order to secure such adhesion, but the grave state of the patient did not allow of any delay. A large quantity of fetid pus and flocculent caseous matter escaped from the incisions, and a considerable mass of unctuous cheesy material was enucleated by the fingers. No bones nor teeth were found. The cyst was then washed out with warm water. On several succeeding days about a syringe-ful of ether was injected into the cyst in order to dissolve out the fatty material. The condition of the patient improved, and the cyst soon began to contract. Two months later the general condition of the patient continued favourable, although the pus was frequently fetid, and no further contraction of the cyst was taking place, except at the artificial opening. The incision was prolonged downwards, in order to prevent stagnation of pus, and injections were made with a weak solution of iodine, but with little effect. On the 29th of September suppuration was still continuing, although the capacity of the cyst had become less.

The author points out that incision from the vagina, whenever practicable, is far preferable to that from the abdomen, since the latter is apt to leave a supuration of indefinite duration through a fistulous opening. Ovariectomy will not generally be advisable, though in two cases it has been successfully performed, once by Spence Wells without, and once by Auger with, a previous recognition of the nature of the tumour. He relates also the case of a young lady in whom a dermoid cyst formed a tumour in the left iliac fossa, and also formed a mass in the pelvis, resembling a hæmatoecle, and pushing the cervix forward against the pubes. The diagnosis was founded on the fact that the duration of the tumour was indefinite; pain had lasted for two years, and the general condition of the patient nevertheless remained good. An incision was made from the vagina, and caseous material mixed with hairs, as well as some teeth, and a portion of bone, were removed. The patient rapidly became convalescent, and the cyst had contracted up to a very small size, although a little discharge of pus from it still continued.—*Obstetrical Journal of Great Britain*, Feb. 1877.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Aspergillus in the Ear. By L. BREWER HALL, M.D., of Philadelphia.

Since the publication by Prof. Schwartz, of Halle, of a case of aspergillus in the ear in 1867, and the monograph upon the subject by Dr. Wreden, of St. Petersburg in 1868, the profession have been pretty generally aware of the existence of fungi in the external auditory canal associated with disease in that part.

But when we inquire further to know the frequency of the disease, its importance, the part played by the fungus of cause, or effect, or even as to treatment, opinions seem almost as various as the physicians and authorities consulted.

For example, Wreden found fourteen cases in little more than a year. A physician whose ear cases are to be counted by the hundred, told me "it is present in nearly every case of old wax." Turnbull describes the disease in his book, but apparently had not seen a case. Beale borrows a specimen from a fellow microscopist from which to make a drawing for his work, and what is most singular in such a man, figures an imperfect specimen, showing only mycelium from which one can say little more than that it is a stage of some fungus, not enough to tell even the group to which it belongs.

The treatment recommended is equally diverse. Burnett attacks it with a hundred grain solution of nitrate of silver and 90° alcohol, and keeps up the treatment for a month. Wreden kills the plant by hypochlorite of lime or Fowler's solution.

Roosa drags it away by means of the speculum and angular forceps, while others use the syringe and warm water "and that's the end on't."

I will relate two cases before disengaging any of these points.

CASE I.—P. R., male, æt. 40, bar-tender; specific diathesis; in general good health, came to me July 31, 1875. Three days before he received a blow on the head to which he attributes all his difficulty in his ear. He complains of a dull heavy feeling on the left side of the head, a ringing noise in the left ear, deafness and pain sufficient to keep him awake most of the night.

On examination the right ear showed the usual signs of subacute catarrh of the middle ear, with the hearing for the watch reduced to $\frac{5}{24}$. In the left ear the hearing was lost, not hearing the watch at all, and the tuning-fork could not be distinguished from the tinnitus. The meatus was filled with a peculiar looking material, somewhat resembling the masses of epithelium which so often exfoliate in acute inflammation of the walls of the meatus. The masses were more tenacious than epithelium, seeming to tear rather than break when lifted by the forceps. A piece of white "tissue paper" wet would convey the idea very well. The microscope showed the real character of the deposit to be chiefly mycelium,

but dotted over with balls of fruit of *aspergillus glaucus*, and being of a yellow colour would belong to the variety *flavescens*.

The walls of the meatus after the removal were very red, as if the whole epithelial coating had been removed.

He made me six visits, the last on August 12, when the fungus had nearly gone and he was not annoyed by the disease.

The treatment so far as the fungus is concerned consisted in washing away the larger masses with a syringe and applying a weak solution of sulphate of zinc, eight grains to the ounce.

CASE II.—P. D., male, æt. 25, shoemaker; rheumatic diathesis; in general good health, came to me September 20, 1876. He had been suffering from severe pain in the left ear for four days. It began without apparent cause, and has been increasing until it prevented sleep for the past two nights.

On examination I found the right ear normal. In the left ear watch was not heard. Tuning-fork on the head was heard louder in left ear.

The left meatus was filled with a white mass, with small greenish-brown dots scattered through it. When removed the part next the walls came away in sheets. Under the microscope this exhibits a tissue of mycelium, with hyphens of a brownish slate-colour, tipped with masses of spores almost black. In other words, *aspergillus glaucus nigricans*.

The walls of the meatus were very red, as also was the membrana tympani, as if denuded of epithelium. The pain subsided at once after removing the fungus, and now, first November, he is well. The treatment has consisted in removing the accumulations with the forceps or syringe, as was most convenient at the time, and then dusting the part with the carbonate of zinc.

The pain which was the chief complaint in both cases rapidly subsided on removing the masses from the canal. This shows the mechanical pressure upon the over-sensitive membrane to be a large element in its production. The rapid expansion of the mass through growth of the fungus would give all the pressure necessary to account for both the pain and the tinnitus.

A careful study of these cases, I think, justifies me in drawing the following conclusions. 1st. *Aspergillus glaucus* in the auditory canal is rare in this climate.

These observations were made at the Eye and Ear Department of the Philadelphia Dispensary, and are the only cases in a record of nearly four thousand, and of a personal examination of about a thousand cases of ear disease. It is not commonly present in plugs of old wax. I have for this purpose examined twenty consecutive cases under the microscope, and found no fungus in any one unless it might be in the spore stage.

2d. *The aspergillus is not the cause of the disease, but in order of time is a secondary phenomenon.*

I base this upon several facts. My second case is accustomed to sit on his bench with the left side close to the window, just the condition of exposure to excite inflammation. Both cases had the fungus in one ear only, which could hardly be the case if the presence of the spores were sufficient to start the disease, for it might, on such a supposition, begin on one side, but the fructification and reproduction of spores by the million in a few days would expose not only the other ear but all persons in the vicinity. Witness the difficulty we experience in keeping preserves, cellies, etc., from the growth of *aspergillus* even in so-called air-tight cans.

Again, the simple removal of the exterior masses or the application of a simple drying powder would not cure the disease if the growth through the epithelium were its cause; well illustrated by *Tinea versicolor*.

3d. *The presence of the fungus aggregates the symptoms and provokes a continuance of the disease.*

4th. *The simplest effective treatment is to keep the meatus free and dry.*

Fungi do not grow in dry situations. Of course, the original disease will require its own special treatment, and here, I think, is the source of all the discrepancies among authors regarding the best remedies.

I have but a single remark more to make; it is that the *Aspergillus flavescens* and *A. nigricans* of the books are at most only varieties of the common cheese-mould *Aspergillus glaucus*, and if we transplant either as I have done from the ear to other situations like a moist bit of cheese, we produce the green colour and other characteristics of the common form so familiar to us all.

A Simple Caутery. By THOS. C. STELLWAGEN, M.D., D.D.S., Prof. of Operative Dentistry and Dental Pathology in the Philadelphia Dental College.

One of the most useful means of applying the aetnal cautery has been apparently neglected or allowed to pass unheeded up to the present time, the simplicity of the method being, probably, the cause of its escaping attention.

It has long been a desirable thing, with the practitioner of dentistry, to be able to accomplish the canterization of what is termed sensitive dentine, often found where the dental caries has attacked the necks of the teeth, near the margins of the gums; most of the canterants in actual use being unreliable, or to a degree unmanageable, and liable to penetrate deeper into the structure, or injure the mucous membrane by running over it. This, to a certain degree, has been avoided by the use of the galvanic cautery; but the apparatus required for this purpose is both costly and cumbersome, besides being easily deranged, and somewhat difficult to apply to certain surfaces where, by the undercutting of the caries, the platinum point requires to be bent or hooked.

While operating on the 13th of March, for my friend Dr. J. S. Walker, I attempted, by the use of a minute coal of fire upon a match-stick, to obtain the sensation of the superficial portion of such a cavity as above described; meeting with some difficulty in the breaking off of the heated portion, he suggested the use of a harder wood, and I immediately ignited the end of a stick of dental pivot wood, which wood, from its characteristics, being both dry and compressed, proved a most satisfactory and inexpensive means of obtaining the desired effect.

It has since appeared to me that sticks of hickory, or any combustible substance that is dense, tough, and readily consumed in the ordinary atmosphere, might be of service to the general surgeon, but particularly where the throat, nares, ear, nostrils, or anus are the points to be cauterized; or for the physician, where immediate vesication is demanded, it could be conveniently used. These sticks might be made more inflammable by soaking in something like a solution of saltpetre, before drying, and passing through the process of condensation, which dentists accomplish by an ordinary draw plate, such as is used for making wire.

To use this, a suitable portion should be burned in the flame of an ordinary match for a few moments, and then, by blowing out the flame, the

incandescence at the point may be brought to the shape desired, and the temperature raised by passing rapidly through the air, or *vice versa*, lowered by allowing a trifling coating of ash to accumulate upon the surface. This will burn thus for one or more minutes, according as more or less is charred by the flame, and one or more of the small sticks are used singly or tied together, or the stick made of larger diameter.

It might also be that a tube of some non-conducting material might be filled with an ordinary lampwick, previously prepared, and by a spring regulated to keep the ignited portion of the combustible material constantly pressed out at one end.

DOMESTIC SUMMARY.

Fissures occurring in Long Bones; with Remarks on V-shaped Fractures of the Tibia.—Dr. R. M. HONORS, in an interesting paper with the above title (*Boston Med. and Surg. Journ.*, Jan. 11, 1877) calls attention to fissures, or cracks, occurring in long bones, particularly the tibia.

The term "fissure" applies to a line of fracture varying in length, the sides of which are in apposition, penetrating through, or partly through, the solid shaft of a bone, and unattended by the separation of fragments. The statement of Malgaigne, that if a fissure involves the whole thickness of the shaft it must extend to one or the other extremity of the bone, is entirely at variance with facts. The gravity of this lesion is unquestionable. A force which disrupts, in the most unyielding direction of its fibres, the shaft of an adult long bone, often at a distance from the point where the violence centres, must be powerful enough to cause serious results.

Certain symptoms, under circumstances to be described, justify the opinion that a fissure exists; but the diagnosis is difficult, and sometimes impossible, even when there is a wound of the soft parts.

It is a well-known fact that brittle cylinders tend to break by lines which assume a spiral direction. Any collection of glass tubes will illustrate this point in their broken extremities or the accidental fractures they may have undergone. It will also show that, almost invariably, a crack in the glass extends the spiral a certain distance into the tube, beyond the broken point. The extent to which this principle is applicable to the fractures of bones is still hardly realized, although attention has been called to it by Gerdy, H. Larrey, Houel, and, emphatically, by Gosselin. Fissures exhibit the influence of this law by generally assuming a more or less spiral direction.

Three varieties of crack, or fissure, may be described:—

I. Those unaccompanied by other fracture.

II. Those starting from a fracture.

III. Those accompanied by, but disconnected with, a fracture.

The first variety may be called the true fissure. No example of it exists in the museums of this city. The elaborate article of Poncet¹ admits but three incontestable cases. It occurs so rarely that instances reported have been subjected to searching criticism. Those radiating from bullet-wounds it is claimed should be excluded from consideration. A femur from the museum of Val de Grâce, with an interrupted linear fissure extending nearly the whole length of its anterior surface, figured by Malgaigne, is without history. It has been suggested that in this, as in other specimens without history, the apparent fissures are really "season cracks," and the result of desiccation or weather exposure. That figure by Gürtl (1862) might in fact be called a longitudinal fracture of the humerus, rather than a fissure, so widely separated are the two sides of the cleft. As, however, well-marked examples of fissure are found entirely independent of the lines of coexisting fracture, it would seem

¹ Nouveau Dict. de Méd. et de Chir., article Jambe, 1874.

very reasonable to conclude that they may occur when no solution of continuity has taken place. The propriety of recognizing the second variety of fissure has also been questioned. Even if it should properly be regarded as but a longitudinal fracture, or at most an eccentric accessory, it still constitutes an interesting form of injury on account of its comparative rarity, and is of great importance from a clinical point of view.

A very perfect instance of this fissure, entitled Crack in the Neck of the Femur, is described and figured by Dr. H. J. Bigelow in his work on 'The Hip. No illustration can convey an adequate idea of its remarkable extent and elasticity. Starting from a transverse fracture eight inches below the trochanter, it runs spirally upward round the shaft and cervix of an unusually solid and large femur, and "terminates on the under side of the neck, in an S-shaped extremity, an inch from the point where the fissure crosses the inter-trochanteric line in front." It could undoubtedly be converted into a complete fracture with little force. The sides of the fissure are closely in apposition, but can be made to spring apart one-eighth of an inch in the neck of the bone, even in the present dry state of the specimen.¹

Dr. Hodges reports another instance of this variety, which is also a typical specimen of what has been called V-shaped fracture of the tibia, as well as a case of the third variety of fissure. In the latter the continuity of the tibia is destroyed at two points. At its upper part by a spiral fracture, in the lower fragment of which a fissure is seen continuing the line of the break to a transverse and dentated fracture, where its further course is arrested. A second fissure extends downward more than an inch from the last-named fracture.

The interesting feature of this specimen, however, is a series of radiating fissures at the lower part of the tibia, diverging in all directions, varying in depth, and opening and closing if the bone is twisted. This complex fissure has no connections with the fractures, its nearest approach being two inches distant. None of its lines encircle the shaft. They are confined to one-half of its circumference, but can be traced longitudinally two and three-quarters inches.

The case of fissure extending to the ankle-joint in connection with a V-shaped fracture of the tibia is of extreme interest. The shaft of the bone exhibits a fracture at the junction of its middle and lower thirds, with the pointed and symmetrically V-shaped extremity of the upper fragment received into a corresponding vacancy in the lower. It will be observed by their relation to the malleolus that these V's involve the internal or subcutaneous surface of the shaft only, and do not trench upon the crest of the bone. The line of complete fracture, at an angle of about forty-five degrees, is uniformly and evenly spiral. From the apex of the V in the lower fragment there starts a fissure, continuous with the spiral line of the fracture, winding round the shaft to the peroneo-tibial articulation, and from this point traversing the extremity of the tibia to the base of the inner malleolus. This fissure at its upper part is joined by a second, beginning on the opposite side of the bone at the fracture, and circumscribing quite a large fragment, which, however, rests firmly fixed in place.

The patient from whom this specimen came was an intemperate woman, aged thirty-seven. The tibia was broken at its lower third, and the fibula at a point further down. There was no external wound, and but little displacement. Great swelling ensued, followed by abscesses and gangrene. The tibia protruded in front of the leg, and the fibula at the ankle. The constitutional symptoms were severe, and for a time the patient's life was in danger. She entered the Massachusetts General Hospital thirteen weeks after the accident, and Dr. Hodges performed amputation through the middle of the leg. A good recovery followed.

This form of fracture was first described by Gosselin.² It has an anatomy of fixed and absolute character, yet it has failed to attract the attention which its peculiarity and importance claim. Although French and German authors speak of it with more or less detail, no English or American work, so far as I am aware, makes any allusion to its existence.

¹ Amer. Journ. of Med. Sciences, April, 1857, p. 306.

² Gazette des Hôpitaux, 1855.

At first sight there is little to distinguish a V-shaped fracture of the tibia from a common oblique fracture. In the latter the projecting point of the upper fragment is usually very sharp, and belongs to the crest of the tibia. In the former it is broad, never in the crest, but always in the internal, subcutaneous surface of the bone. The two sides of the point are of equal length, and are received into an open V in the lower fragment. The line of the fracture is invariably a spiral one, and the names "spiral" and "spiroidal" have been applied to it. But these have been objected to because they characterize nothing peculiar to this injury; whereas the term "V-shaped" designates that feature of the fracture, recognizable through the integuments, which reveals an important lesion that would not be suspected if this indentation were wanting. Whenever this V is observed, there are always present: 1st, a serious disturbance of the medulla; and 2d, a fissure, starting from the apex of the V, winding spirally around the shaft, and extending to the articulating surface of the tibia, which it traverses. This fracture, therefore, is distinguished from all others by its stereotyped features, and the constant accompaniment of a fissure down to and into the ankle-joint. These characteristics are so unfailing that it is said, if you have seen one specimen you have seen all ("qui a vu l'un a vu l'autre"). The illustrations representing this fracture offer a striking uniformity. Gosselin, Follin, A. Richard (who gives four figures on one page), and the *Nouveau Dictionnaire de Médecine et de Chirurgie*, reproduce almost identical outlines. It usually occurs at the union of the middle and lower thirds of the bone. The fibula is commonly, but not always broken. The mechanism of its production is a matter of dispute. The splitting of the lower fragment by the wedge-shaped upper one, and the crushing of the medulla, resemble the well-known phenomena of impaction.

The specimens figured show, however, that a V-shaped fracture of the tibia is not the only one attended by prolonged fissure. Thus, in a common oblique fracture of the tibia, of which figures are given, the apex of the upper fragment being at the crest, there is a fissure, linear and not spiral, in the thin parietes of the shaft, which does not continue the line of the main fracture. Other figures represent a fracture high up in the tibia. The fissure which starts in the lower fragment is arrested in its progress by an intervening transverse fracture. Other fissures, disconnected with and below this fracture, extend their irregular outlines to the lower portion of the bone.

The conclusion to which we arrive is, therefore, that a fissure may exist undetected; but if in a broken leg, the fracture is upon the internal, subcutaneous surface of the tibia, and its upper fragment reveals a broad and short V-shape, then the presence of this additional lesion may be safely assumed. Under these circumstances a tender and sensitive shaft, or a swollen and stiff ankle-joint have great significance, and lead to the suspicion of grave injury.

The peculiar shape of the broken bone in a V-shaped fracture makes it a matter of difficulty to keep the upper fragment in position. Slough by pressure not unfrequently happens, and the simple fracture becomes compound, both fracture and ankle-joint being opened to the air. As a rule, a fatal result then takes place. Contusion of the medulla is quickly followed by suppurative osteo-myelitis if the air has access to it. The products of putrefaction in the oil of the medullary cavity appear to be specially deleterious, and provoke blood-poisoning with great rapidity. Fatty emboli, in a putrid state, have been repeatedly found in the lungs of patients who have died from V-shaped fractures. On the other hand, it may be kept in mind that the general prognosis is less serious than some of the early observations seemed to indicate. In spite of long delay, recovery often takes place in cases uncomplicated by a wound, leaving, however, a degree of stiffness in the ankle greater than usually occurs from the mere vicinity of a break.

Amputation is indicated whenever this fracture, at the time of the accident, or, at later period, becomes compound. Gosselin, in his first paper, remarked that "he was almost disposed to say the complication of a wound was a piece of good fortune, since it spurred the hand of the surgeon, and made obligatory the amputation, which alone could save the patient's life." Verneuil states that he lost all the patients with compound V-shaped fracture whose limbs he tried

to save, while two out of three amputations were followed by recovery. Poncet says that at the Military Hospital of Strasbourg three V-shaped fractures with wounds, but without much apparent injury, and which seemed to justify attempts at conservation, proved fatal. Dr. Hodges' experience, limited to two cases, corroborates these observations.

A degree of irregularity of union attends the permanent consolidation of these fractures. Contrary to the general rule, by which the foot inclines to turn outwards, the foot here turns inwards. If the patient, lying down, is asked to put his feet side by side, he does so only by turning the knee and thigh outwards. Nor can he put his knees side by side except by turning the foot and lower part of the leg inwards. This distortion may be absent at the time of the injury, or, if present, is readily obviated; but, during treatment, the upper fragment of the tibia, and the thigh, little by little, rotate outwards, until, when noticed, the deformity is permanent. This result is stated to occur only in connection with a V-shaped fracture of the tibia. Dr. Hodges has never verified this observation, but, if correct, it calls attention to a tardy diagnostic sign, which may throw light upon a protracted case, and moderate too sanguine expectations of speedy recovery.

Persistent pain often follows what may be called "recovery" from a V-shaped fracture. Dr. Hodges has seen two instances where the contour of the united bones, together with the symptom just spoken of, led him to diagnose this injury. A deep-seated inflammation of bone, or of the periosteum, does not always betray itself by external signs; but a lingering soreness in the tibia, especially if accompanied by pain and stiffness in the ankle-joint, may, in view of the facts here enumerated, find its explanation in the existence of this peculiar fracture.

Case of Persistent Priapism.—Dr. M. M. WALKER, Physician to the Virginia Prison, reports (*Virginia Medical Monthly*, Feb. 1877) the case of a negro convict, aged 26, who appeared at sick call on July 14, holding his penis with both hands, which, if let go, assumed almost a perpendicular position, and was found, upon examination, to be hard, erect, painful, and fully distended, except the glans, which did not seem to sympathize with the rest of the organ, but which was in an almost wrinkled condition. He stated that he waked up about the middle of the night, of July 12, in that condition, and thought he had been dreaming, but did not remember the purport of his dreams. The next day, he used cold water freely, hoping and expecting the penis to subside. Careful examination failed to detect any disease of any organ or tissue. He stated that he had not been practising masturbation, and had had no venereal disease, but had been "bad after women." He was apparently in perfect health, and there was no symptom to treat but the erection. Complete anæsthesia by chloroform had not the slightest effect upon the penis, nor had ice bags to the spine, bromide of potassium or belladonna ointment locally applied. The urine had to be drawn off by a flexible catheter, which was introduced without any difficulty. He stated that he had no sexual desire, and did not think intercourse would give him relief.

July 18. The patient is considerably prostrated. There is, and has been during the night, profuse diaphoresis. A few drops of urine passed about one or two o'clock in the night, but the usual quantity was drawn this morning. The organ has not softened in the slightest degree. The hot bath and spositories of assafoetida and belladonna were then tried without effect. Tartar emetic in half-grain doses every hour until vomiting was produced "that effect to be kept up during the day" and chloral at night was tried in vain. On the 28th "Norwood's tincture," ten drops every three hours until the pulse is reduced to fifty, was ordered. A hard ring around the cavernous bodies about the size of a slate pencil and about two inches below the glans, was noticed. On the 31st the effect of the veratrum became evident: the pulse was a little below fifty, and the penis much relaxed. August 10. Improvement gradual from day to day, but is well marked at this date, but in the intervening time, when the medicine has been stopped on one or two occasions, the organ has become hard and painful again. From this time the treatment is discontinued

entirely. The penis is inclined to the right, and if turned in the other direction, will fall back. The ring around the corpora cavernosa has disappeared.

Sept. 30. The patient is discharged from the hospital to-day. For two weeks the penis has seemed to be of its natural size, and in a normal condition, but until two or three weeks ago, occasionally it has given pain, and the improvement has been very gradual. Since his recovery he has frequently had strong sexual desire, but the organ does not respond.

New Modifications of the Ophthalmoscopic Mirror.—Dr. O. F. WADSWORTH, of Boston, has recently made (*Boston Med. and Surg. Journ.*, Jan. 25, 1876) an ingenious and what promises to be a useful addition to Loring's ophthalmoscope. This consists of an additional mirror, designed particularly for the use of the upright image and the determination of the errors of refraction. The mirror is circular in shape, and of the same focus as that now ordinarily used. The peculiarity of the mirror is that it is only fifteen millimetres in diameter. The small diameter of the mirror permits it to be set at an angle of twenty degrees, and yet allows, the hole in the mirror to be brought close to the glass in the disk. The mirror rotates from right to left, so that either eye can be examined. The disadvantages of this mirror are, that it is so small that sufficient light is not obtained to make an examination by the inverted method, thus necessitating an alternate substitution of two mirrors. To avoid this necessity, Dr. Loring has contrived (*Medical Record*, Jan. 6, 1877) the following modifications of the ordinary mirror, suggested by Dr. Wadsworth's idea:—

The general shape of the mirror is kept as it now is, except that a segment is cut from one side, a straight line having been drawn in a vertical direction about half way between the centre of the hole and the edge of the mirror. The mirror is then swung on two pins in a vertical direction. When an inclination is needed, the mirror is tilted down into the case, at the side which has been cut away; and, as only ten degrees of pitch within the case is needed, the present case is deep enough. When needed for the inverted image, the mirror can be folded back, or, indeed, used just as it is. This mirror rotates from right to left. It gives abundant light for either method of examination, and can, if thought advisable, be protected by a case similar to that of Jaeger's mirror.

This modification has been rendered still more simple by cutting off both sides of the present mirror, making, in fact, a narrow parallelogram sixteen millimetres in width, instead of a circular mirror. This tilts both ways in the case, and does not have to be rotated, and can be used perfectly well for either upright or inverted image. If more light should be needed, it can be obtained by having the segments which have been removed restored. The mirror would then consist of three parts—a central portion which swings on pivots, and two side portions which remain stationary. Still a farther modification towards the same end, and one which is more elegant but more expensive, is to have a small central mirror swung on pivots, surrounded by a concentric stationary mirror. These mirrors can be fitted to any ophthalmoscope. By such an arrangement we do away, in a great degree, with the astigmatism which is produced when strong glasses are used, and when the mirror lies in a plane parallel to that of the correcting glass, as is the case with the ophthalmoscopes now in common use.

These mirrors can be had of Mr. Hunter, optician, 1132 Broadway, N. Y.

Treatment of Placenta Prævia.—Dr. R. DAVIS, of Wilkesbarre, in his address in Obstetrics before the Medical Society of the State of Pennsylvania, in May last, advocates the following plan of treatment of placenta prævia, which is a material modification of Barnes's operation: As soon as the os uteri will admit two or three fingers, pass the hand into the vagina. Ascertain by sweeping the finger around between the placenta and uterus (without disturbing their connections) on what side the separation of the placenta is most extensive. That will always be the side of the least extensive attachments. Introduce two or three fingers, on that side, up between the placenta and uterus until the border of the placenta, where the membranes begin, is reached, severing the attach-

ments as you go, if any remain; then hook the fingers over the border and draw the placenta forcibly down and pack it closely to the other side. The membranes will, of course, come down with it, and will protrude through the open mouth of the womb. Rupture the membranes at once, and empty the womb of its waters as thoroughly as possible. The head, if it presents, and if pains are active, will now engage in the os, and will crowd the placenta to the side of the cervix, on one side, and will block up the open mouths of the vessels upon the recent seat of the placenta on the other, *and the hemorrhage will cease.* In every case in which I have resorted to this procedure, such has been the happy result, and I have been left free either to allow the labour to end naturally or to end it myself by the forceps.

In favour of this procedure it may be urged: 1st. That it is in imitation of the method nature adopts in all those cases of partial placenta prævia in which she is able to accomplish delivery unaided by art, and that it obviates all necessity for version.

2d. In the performance of the operation, no more of the utero-placental attachments are severed by the operator than is absolutely necessary to be severed in order to make way for the child.

3d. It leaves the connections between the uterus and placenta *on one side* of the uterus undisturbed, and that on the side of the most extensive union, a consideration of the first importance, as regards safety to the child.

4th. This operation is, of course, applicable only to cases in which the placenta completely covers the internal os.

5th. As compared with Barnes's operation, it may be remarked, 1. That it more effectually relieves the strain put upon the placenta by the dilating os, and the pressure from above; 2. The obstruction to the passage of the child caused by the overlying placenta is completely removed by this procedure, so that the placenta is no longer *prævia*, in the true sense of the word; 3. No doubt can remain after this operation as to the accomplishment of the result aimed at, viz., complete lateral detachment.

Dr. Davis closes his address with the following brief summary of what he regards as the best treatment to be pursued in placenta prævia: If active interference is called for, in consequence of flooding, before dilatation has begun, I would strive, by every means known to our art, to control the bleeding and hasten dilatation. Preferably, I would use for this purpose: 1st, Molesworth's dilators, preceded, if necessary, by a sponge-tent; 2d, Barnes's dilators; 3d, the tampon, or colpeurynter; 4th, ergot, if the presentation is not transverse; 5th, evacuation of the liquor amnii. By a judicious and skillful use of these means I believe that fatal hemorrhage, if the case be seen in time, may almost always be prevented until the os is dilated an inch and a half or two inches. Then, if the os be not covered by placenta, rupture the membranes; and, if the hemorrhage does not then cease, apply the forceps after Dr. Eshleman's method. But if the os be covered by placenta, Dr. Eshleman's procedure must be preceded by the operation of lateral detachment, and drawing the placenta down to one side, as recommended in this paper. In a large proportion of cases, after the execution of this procedure, and giving ergot, kneading the abdomen, and applying the binder, bleeding will stop, and the case may be left to nature. If, however, the womb refuses to contract sufficiently to cause the head to tampon the os, and stop the bleeding, an attempt should at once be made to apply the forceps; and once the blades of the instrument have been properly adjusted to the child's head, the accoucheur becomes master of the situation.

As to version, this much-vaunted operation I would reserve for two classes of cases: 1st, cases of transverse presentation of the child, *provided*, that cephalic version cannot be easily performed by the bi-polar method; 2d, cases in which, for some reason, the blades of the forceps cannot be made to grasp the head within the cavity of the uterus.

OBITUARY NOTICE.

THE death of JOSEPH CARSON, M.D., Emeritus Professor of Materia Medica and Therapeutics in the University of Pennsylvania, has been already announced to the public. It is proper, however, that a summary of his claims to respectful and affectionate remembrance should be recorded in this Journal, to the pages of which he made many valuable contributions.

Dr. Joseph Carson was born in Philadelphia, April 19, 1808, and died December 30, 1876, in the sixty-ninth year of his age.

Part of his early education was received at the Germantown Academy, then under the immediate direction of Mr. John Brewer, a very highly respected teacher of boys.

After a course of study during three years in the University of Pennsylvania, he graduated, one of a class of eight, from the Department of Arts, July 27, 1826.

Very soon afterwards he was employed in a wholesale drug-house, with a view to a commercial rather than to a professional vocation. It is remembered that, in conformity to the usage of the time, Mr. Carson, like all young beginners in any business, was required to sweep the counting-room, make fires, wash bottles, and do anything necessary to be done in connection with the career.

During the few months given to these very rudimentary occupations, he acquired from the master of the drug-house a decided inclination to study botany, especially in connection with drugs of vegetable origin; and this study led him to abandon the art of dealing in drugs and pursue instead the science of medicine in all its departments.

Naturally inquisitive, and endowed with senses always alert, his few months' experience in the drug-house gave him information which was valuable in his subsequent pursuits, and possibly influenced him to devote himself especially to materia medica in preference to any other branch. At any rate, with a short training in the art of buying and selling drugs, and a collegiate education, he commenced the study of medicine. He became a private or office pupil of Dr. Thomas Hewson, and followed the courses of lectures prescribed in the medical department of the University of Pennsylvania, and was graduated from it Doctor of Medicine in March, 1830.

Very soon after the Commencement, he was elected a resident-physician in the hospital of the Philadelphia Almshouse, and discharged the duties satisfactorily during a year or more.

Between Oct. 13, 1831, and August 3, 1832, he served as surgeon of the ship *Georgian*, Captain John Land, and visited Madras and Calcutta. The journal which he kept during the voyage shows that he was a careful observer. The temperatures of the sea and air and the fluctuations of the barometer are daily recorded in it; and marine animals observed are noted, and some of them figured.

Immediately after his return home he engaged in private practice.

October 29, 1833, he was elected a member of the Academy of Natural Sciences of Philadelphia, and placed on the Botanical Committee Jan. 1834, and zealously assisted in arranging and caring for the herbarium. He held the office of librarian two years, from Dec. 1834, until Dec. 1836, and aided in preparing and publishing a catalogue of the books. He served on the Publication Committee five years, from Dec. 1836, until Dec. 1841; was recording secre-

tary during six months in 1837; and was one of the vice-presidents from Dec. 1869, until Dec. 1875, a period of five years. His labours and contributions of various kinds during forty-three years aided considerably to advance the purposes of the Society—the acquisition and diffusion of knowledge.

He was elected Professor of *Materia Medica* in The Philadelphia College of Pharmacy in 1836, and held the chair until 1850. During this period of fourteen years, he was editor of the *American Journal of Pharmacy*, assisted first by Professor Robert Bridges and subsequently by Professor William Procter, Jr., and contributed twenty-six original papers to its pages.

He edited, with notes and additions, the second American edition, published in 1843, of Pereira's *Materia Medica*, and the third American edition of the same great work published in 1852.

In 1847 he published his *Illustrations of Medical Botany*, comprised in two quarto volumes, with 100 plates.

He was selected to be a member of the American Philosophical Society April 19, 1844. He was a curator of the Society from Jan. 1859, during seventeen years; and served on the Publication Committee from Jan. 1866, until Jan. 1875, and on the Library Committee from Jan. 1875.

He was a member of the National Convention for Revising the Pharmacopœia of the United States, and served on the Committee of Revision and Publication in 1860, and was chairman of this committee and president of the convention in 1870.

He was elected a member of the Historical Society of Pennsylvania Jan. 25, 1847, and served on the Finance Committee from February, 1858, during more than eighteen years.

Dr. Carson was elected a fellow of the College of Physicians of Philadelphia Dec. 1838, and was one of the censors for several years. He was a delegate from the College to the National Medical Convention held at Philadelphia, May, 1847, which resolved itself into the American Medical Association; and was appointed a member of the committee on indigenous botany. Subsequently he was many times a delegate at the annual meetings of the American Medical Association, and was elected one of its representatives to the International Medical Congress of 1876.

He was a member of the Philadelphia County Medical Society. He was its president in 1862, and one of its delegates to the Quarantine Convention held at Cincinnati, May, 1861.

During 1870, he was elected honorary member of the College of Physicians and Surgeons of Reading, Pa.; of the State Medical Society of New York; and of the Philadelphia College of Pharmacy.

He was elected, Feb. 1872, a member of the Board of Directors of the Philadelphia Trust and Safe Deposit Company, in which he was esteemed for his knowledge of affairs and judicious counsel.

He was physician of the Foster Home in 1840; physician of the lying-in department of the Pennsylvania Hospital from 1849 until May, 1854, when it was permanently closed; and was elected a consulting physician of the Hospital of the Protestant Episcopal Church in May, 1852.

He was elected Professor of *Materia Medica* and Therapeutics in the medical department of the University of Pennsylvania in 1850; failing health induced him to resign the chair in May, 1876, and he was appointed emeritus professor.

Faithful application of natural ability of a high order suitably trained made him a proficient in knowledge of *materia medica* and therapeutics at an early period, and enabled him to maintain himself always master of the subject. As a teacher, he deserved and had the respect and unreserved confidence of

students, as well as the affectionate regard of a very large proportion of all the pupils whom he taught in the Philadelphia College of Pharmacy and in the University during forty years.

He was always loyal to the interests of the University. Early in the year 1869 he published "A History of the Medical Department of the University of Pennsylvania from its foundation in 1765, with sketches of the lives of deceased Professors," an octavo volume, which is appropriately dedicated to the alumni of the school—a work of great labour in research, and in every respect worthy of the appreciation and confidence of all those who feel any interest in the origin and progress of the oldest medical school in the United States.

The track of his career may be traced in the brief summary of his work and connection with various societies given above. It indicates that Dr. Carson was always engaged in benevolent and useful occupations. Blessed with an accurate and retentive memory, he had accumulated, by extensive reading and intercourse with intelligent men at home and in different parts of our country, large stores of precise and miscellaneous information from which he drew freely on appropriate occasions. He was fluent in conversation and ready in debate. Unsensual and unselfish in constitution, placidly cheerful in disposition, and always self-possessed and respectful in his deportment to all, he quickly made friends, and was rarely deserted by any whom he had once attracted to himself. He was considerate towards inferiors, charitable to the indigent, generous to the unfortunate, and ever ready to contribute from his stores of knowledge to assist others in their pursuits. In this connection, his correspondence with former pupils was very extensive and various. Indeed, warm attachment to his friends and active devotion to their interests was a characteristic of his nature.

His health was never robust. Since his youth, he rarely passed a year without an attack of acute tonsillitis or of gout, attacks which he sustained, courageously.

Reared under the influence of the Protestant Episcopal Church, of which he was a communicant, his daily conduct in all relations of life was in harmony with Christian precept and practice. Broad and liberal in his views, he was tolerant in spirit; but he despised bigotry, pretension, insincerity, and charlatanry in whatever form or degree or colour such weaknesses appeared; and he did not hesitate to denounce them in emphatic language on opportune occasions.

His career is a fair exemplification of how much may be achieved by a man of industrious ways, coupled with absolute probity and good sense, in the face of restricted means and imperfect health.

In the death of Dr. Carson science has lost a devoted labourer, the University a faithful friend and efficient servant, and society a valuable member.

W. S. W. R.

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